

NASA Contractor Report 189656, Volume 4

FINAL TECHNICAL REPORT

For

**Support Activities to Maintain Sums
Flight Readiness**

Contract No. NAS1-17399

**Volume 4 of 9
Attachment B: Flight STS-35 Report
(Section B)**

submitted to

**National Aeronautics and Space Administration
Langley Research Center
Hampton, Virginia 23665-5225**

by

**The University of Texas at Dallas
P.O. Box 830688
Richardson, Texas 75083-0688**

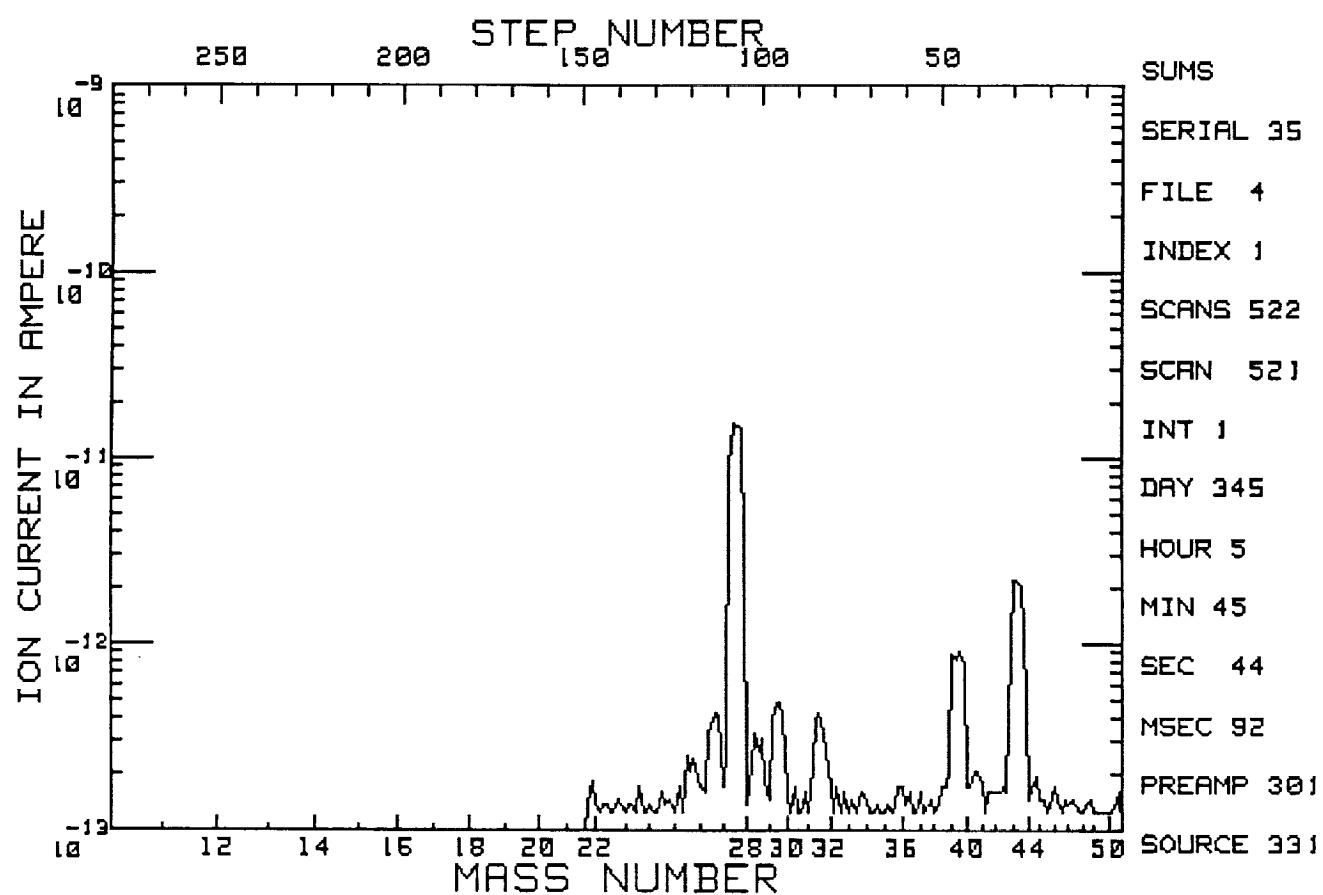
**(NASA-CR-189656-Vol-4) SUPPORT ACTIVITIES
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ATTACHMENT B: FLIGHT STS-35 REPORT, SECTION
B Final Technical Report (Texas Univ. at
Dallas) 158 p**

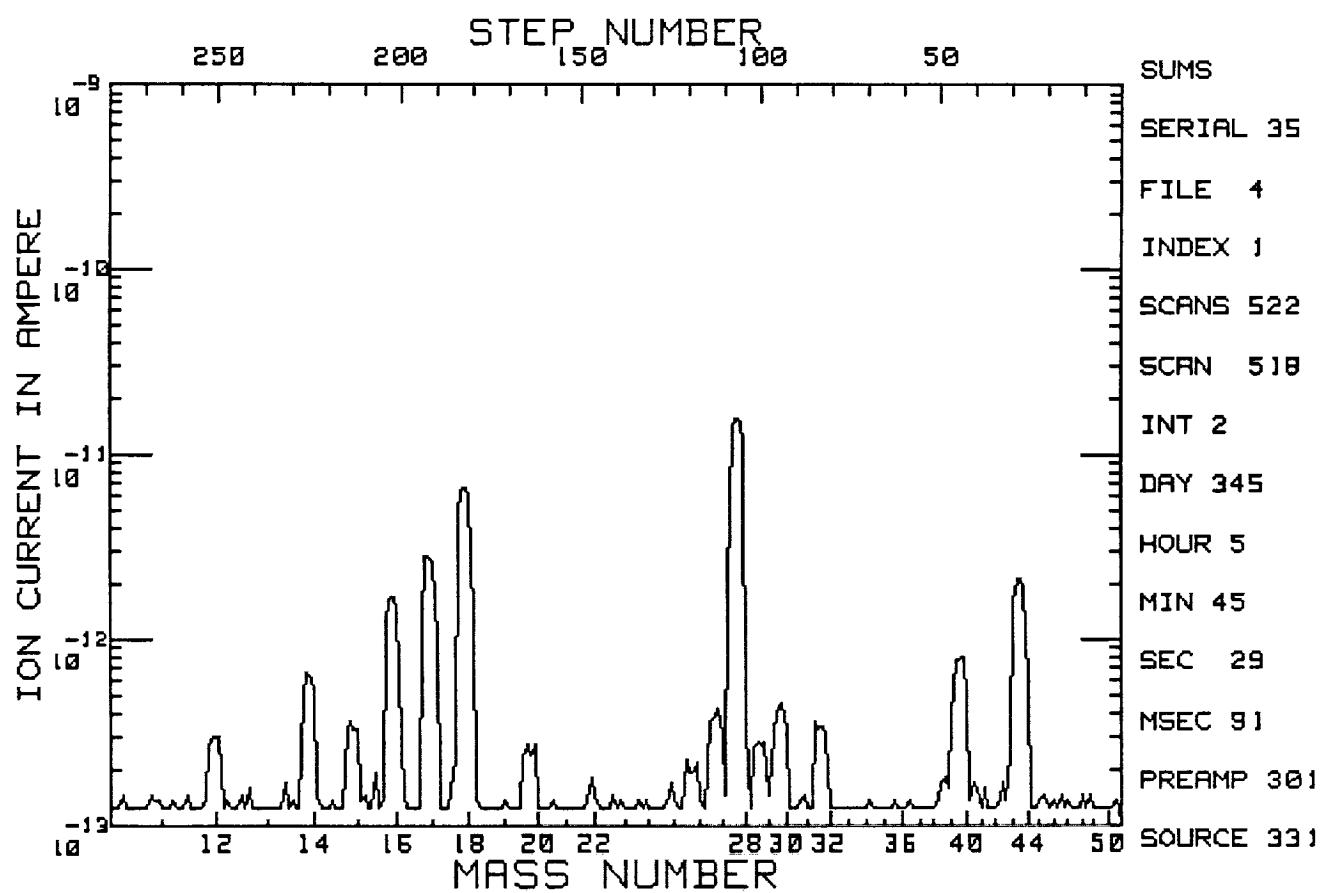
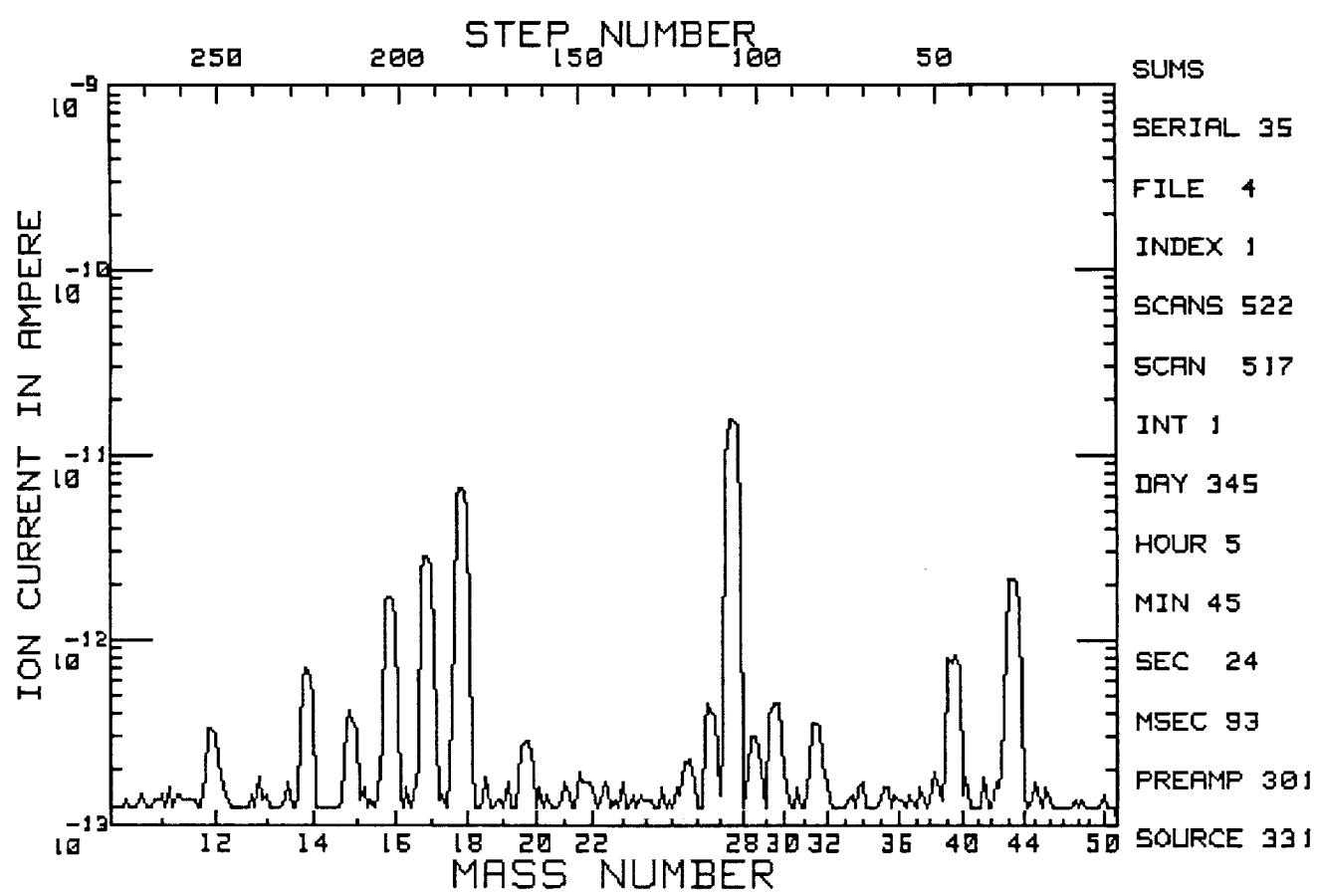
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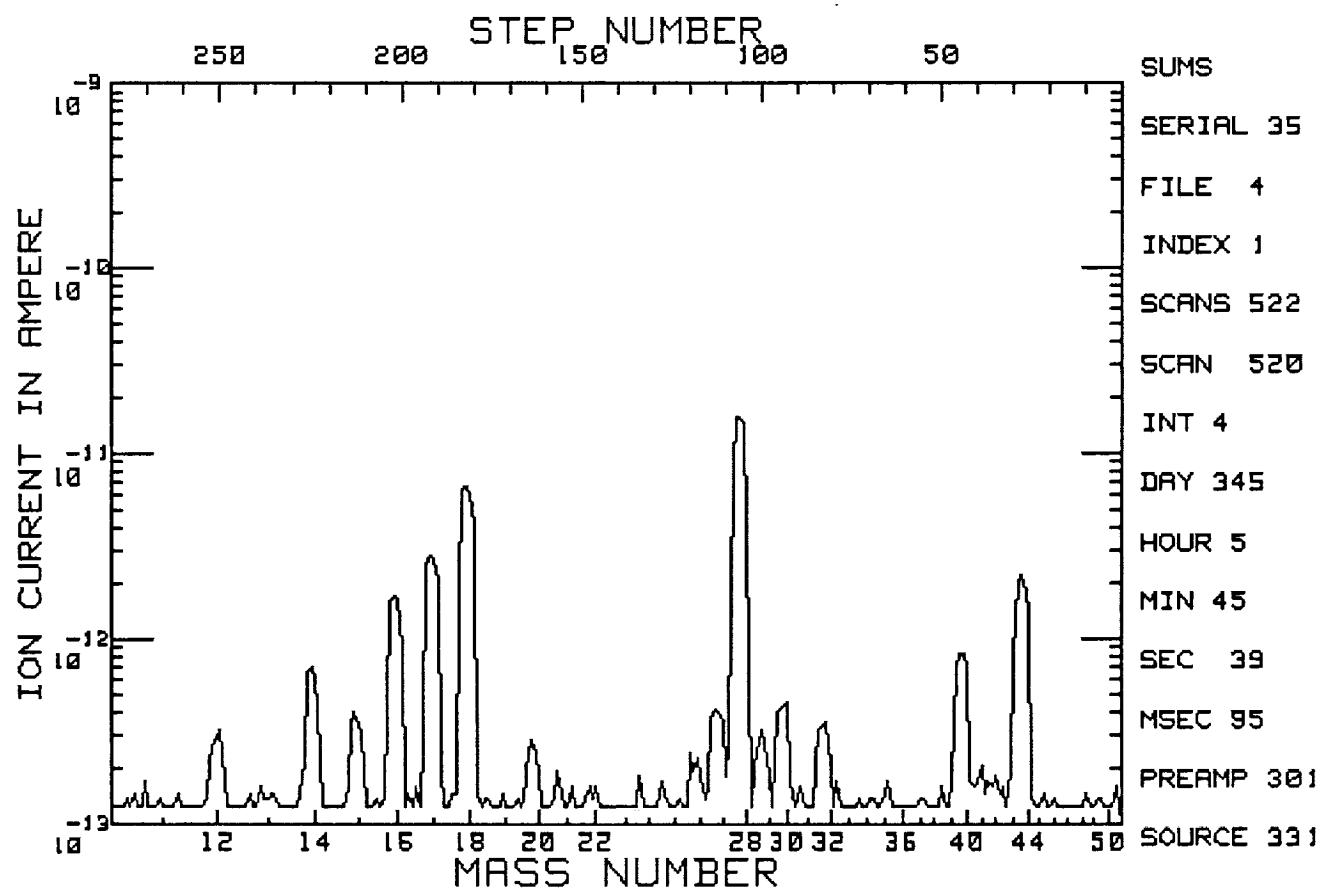
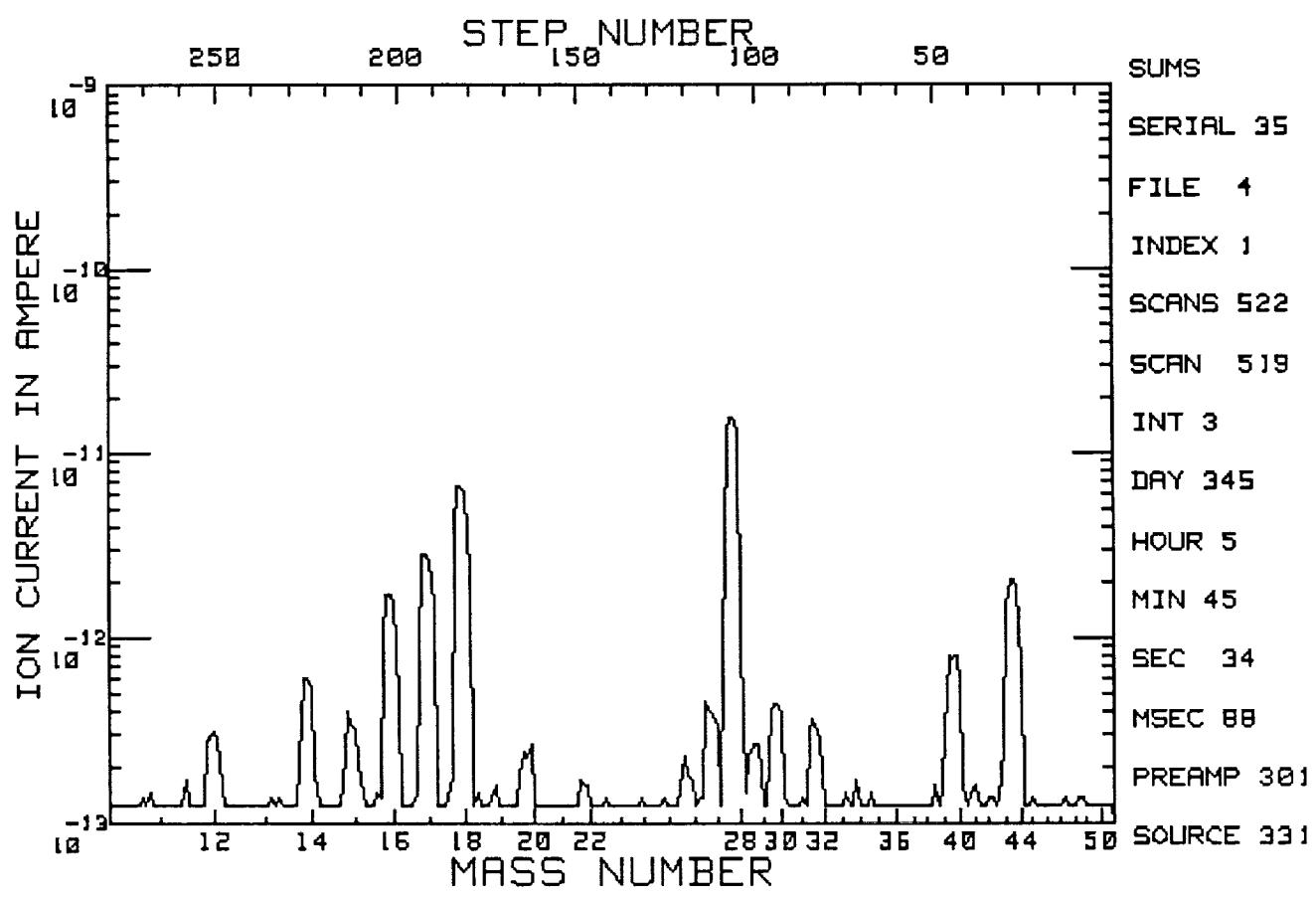
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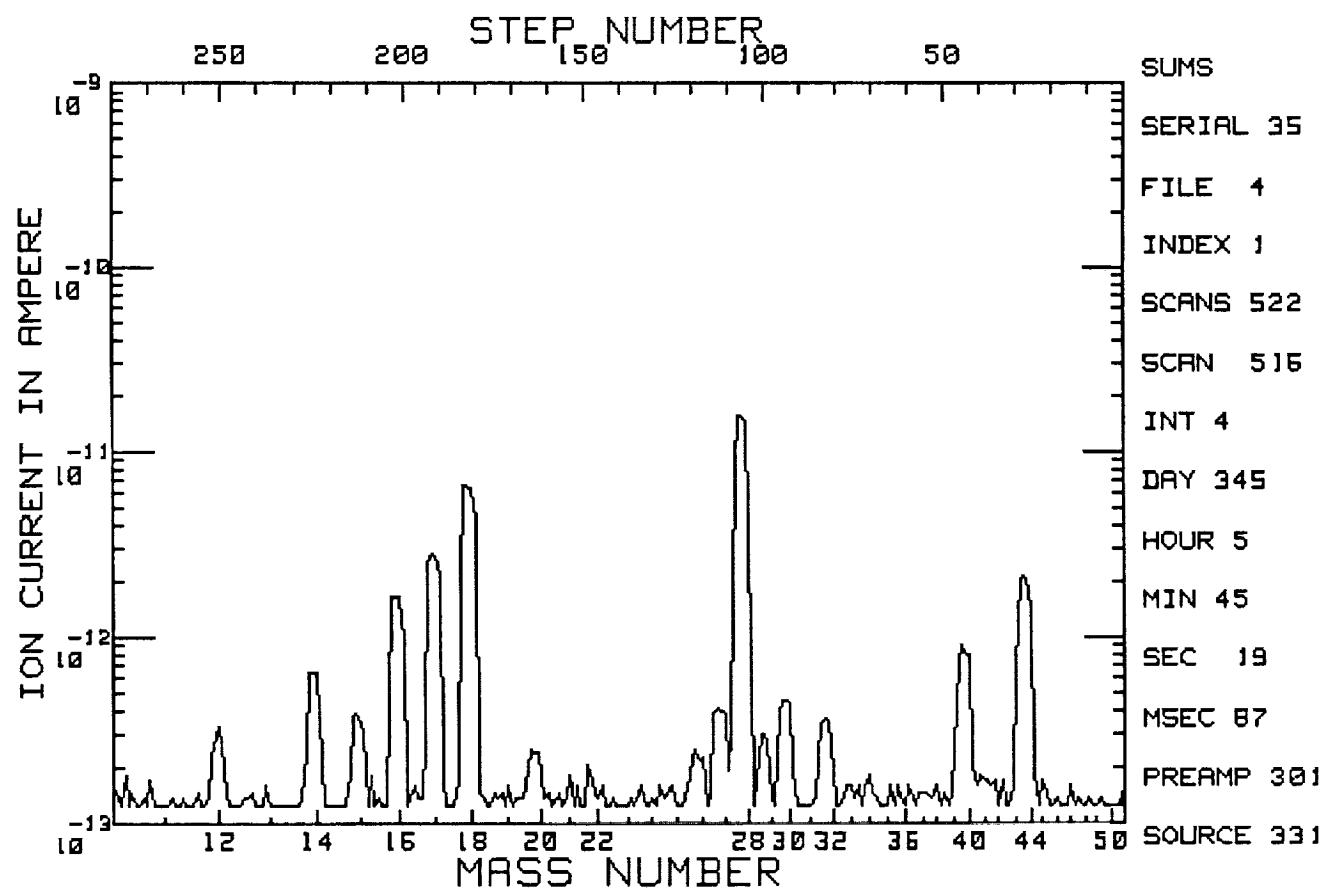
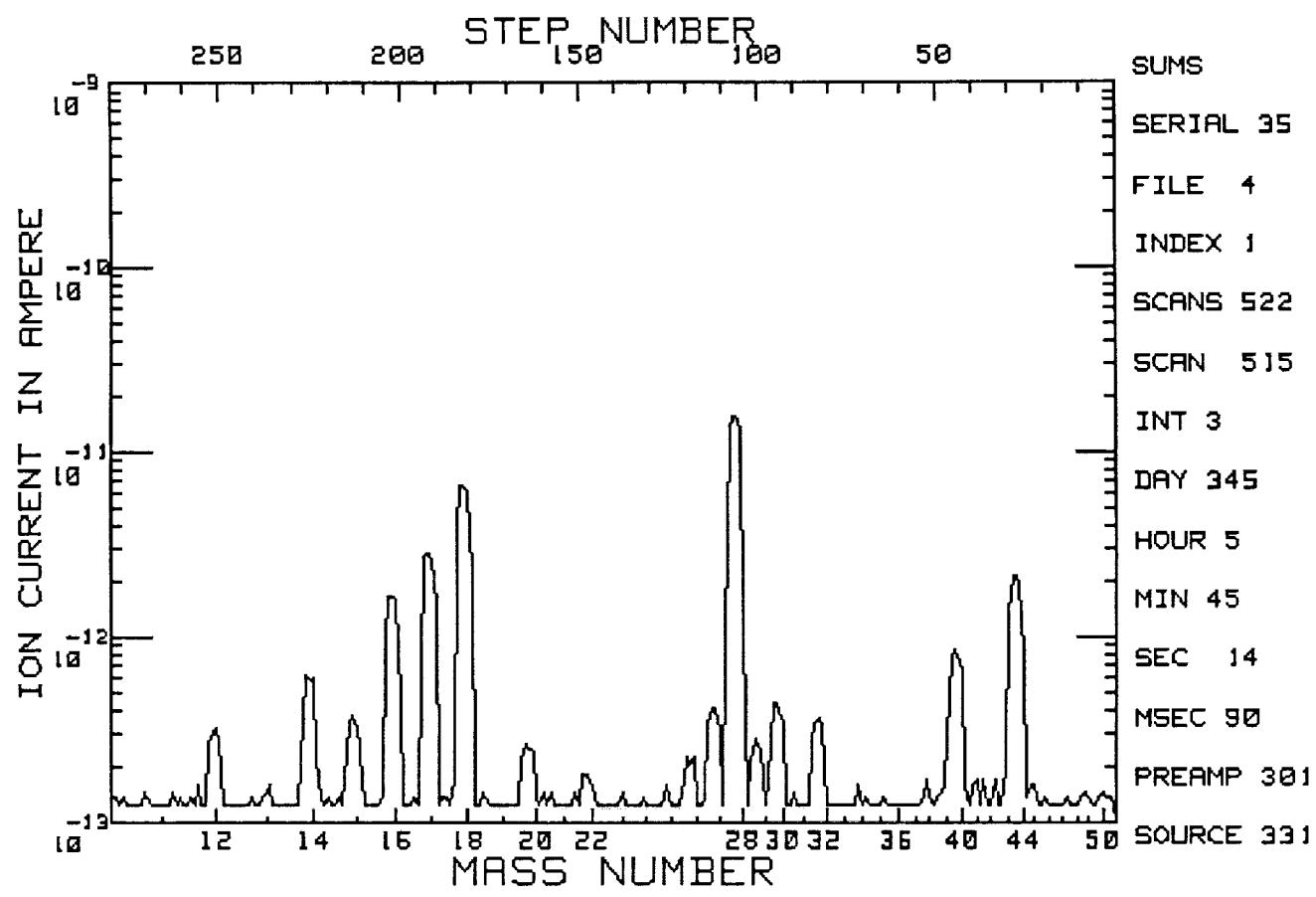
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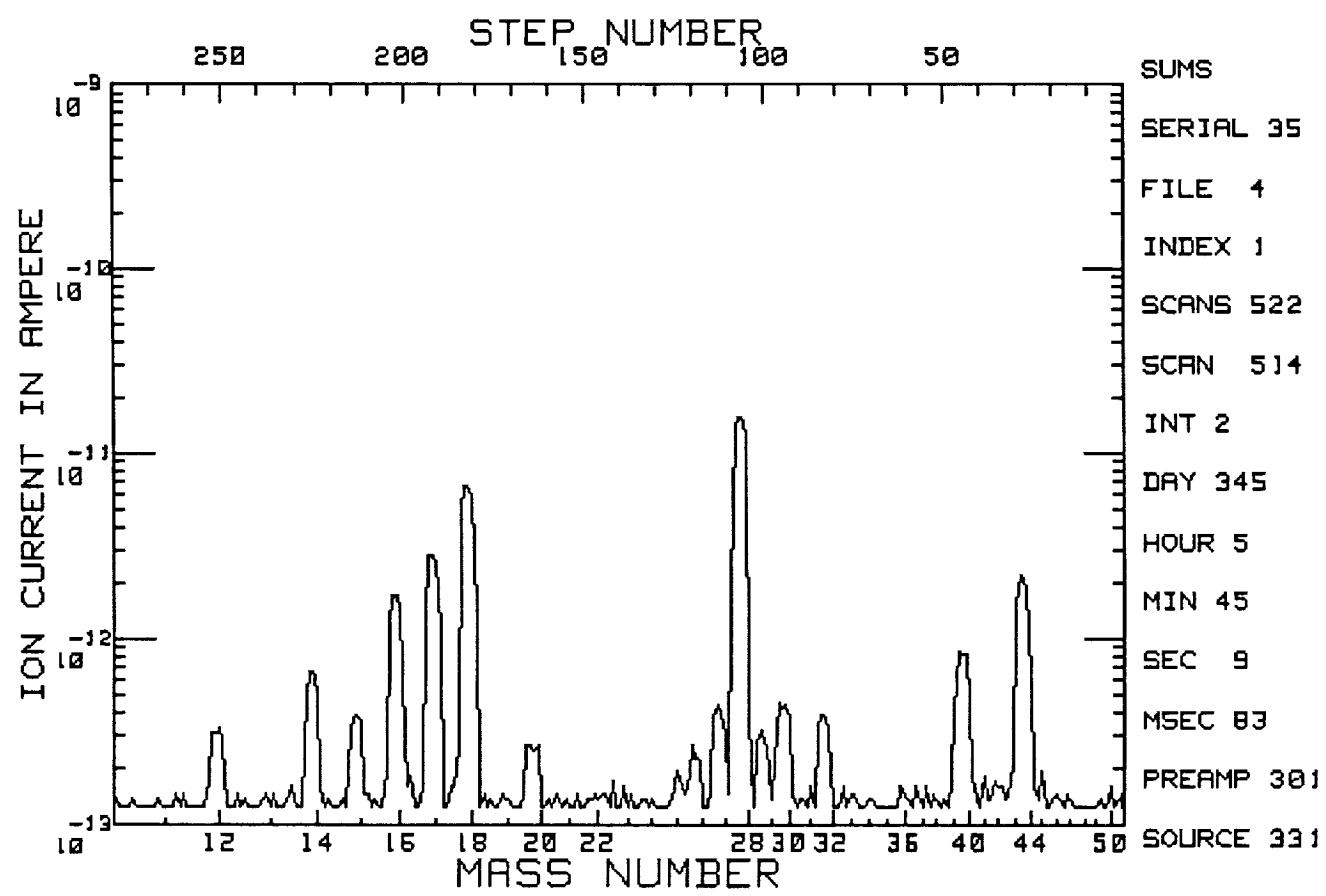
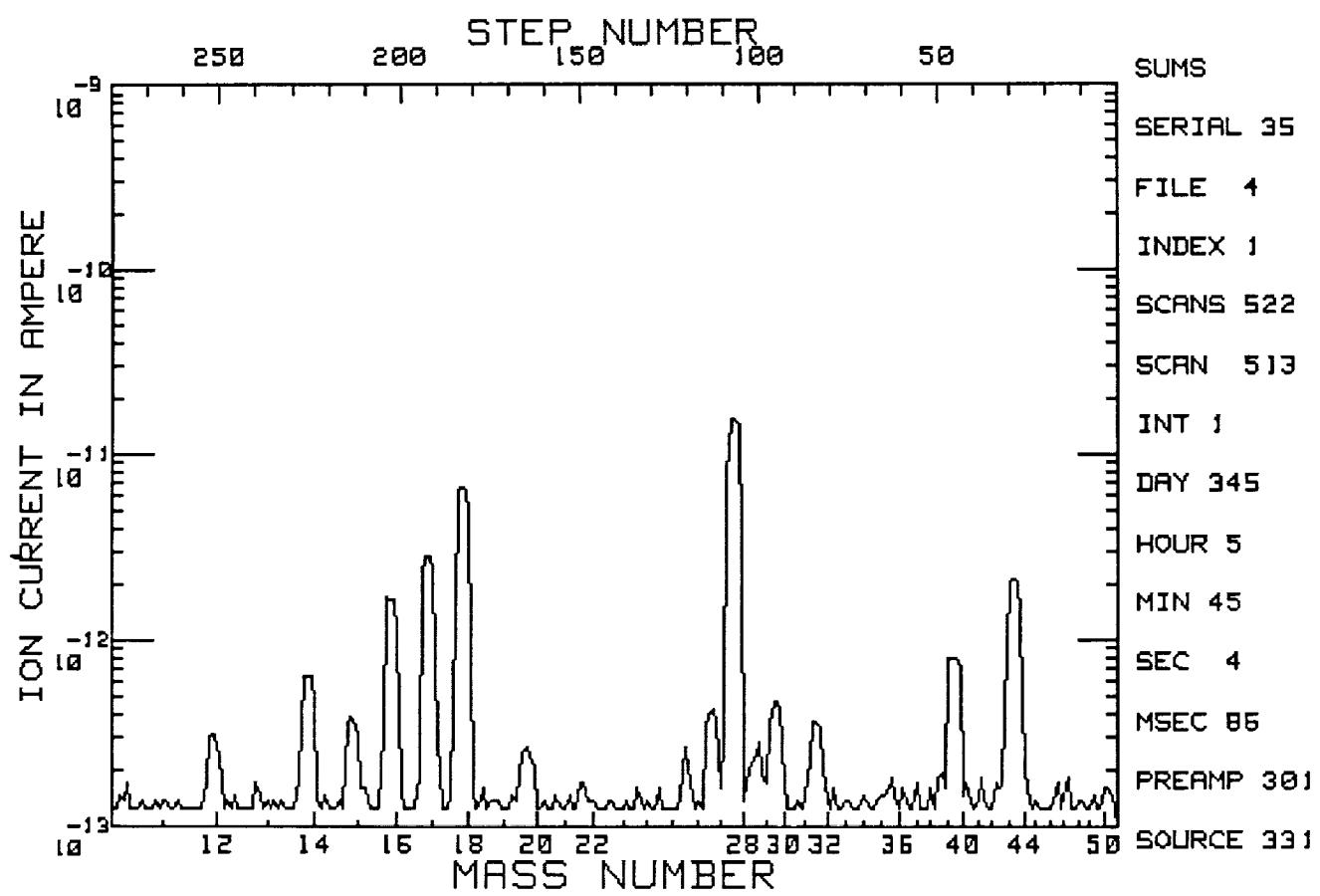
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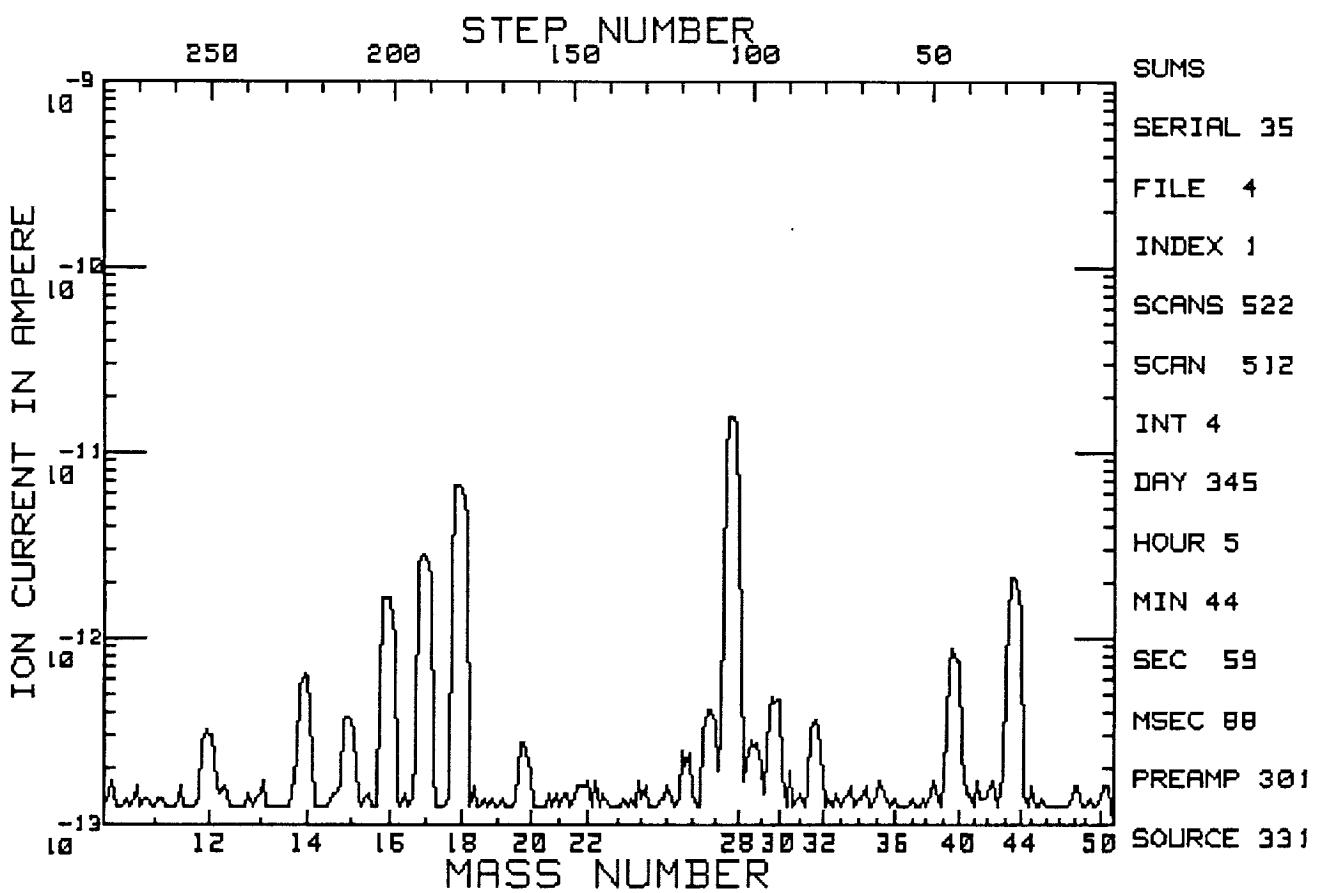
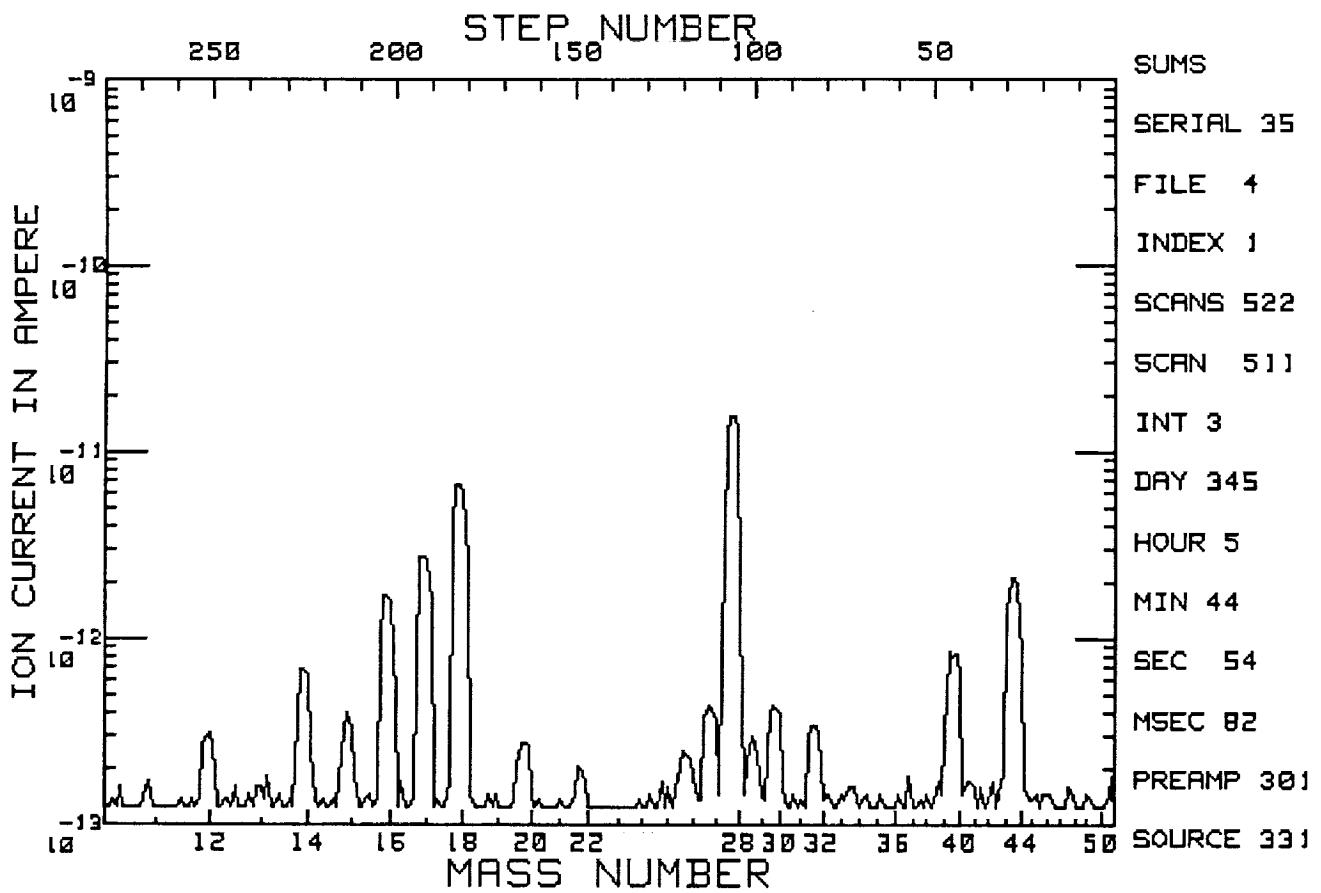


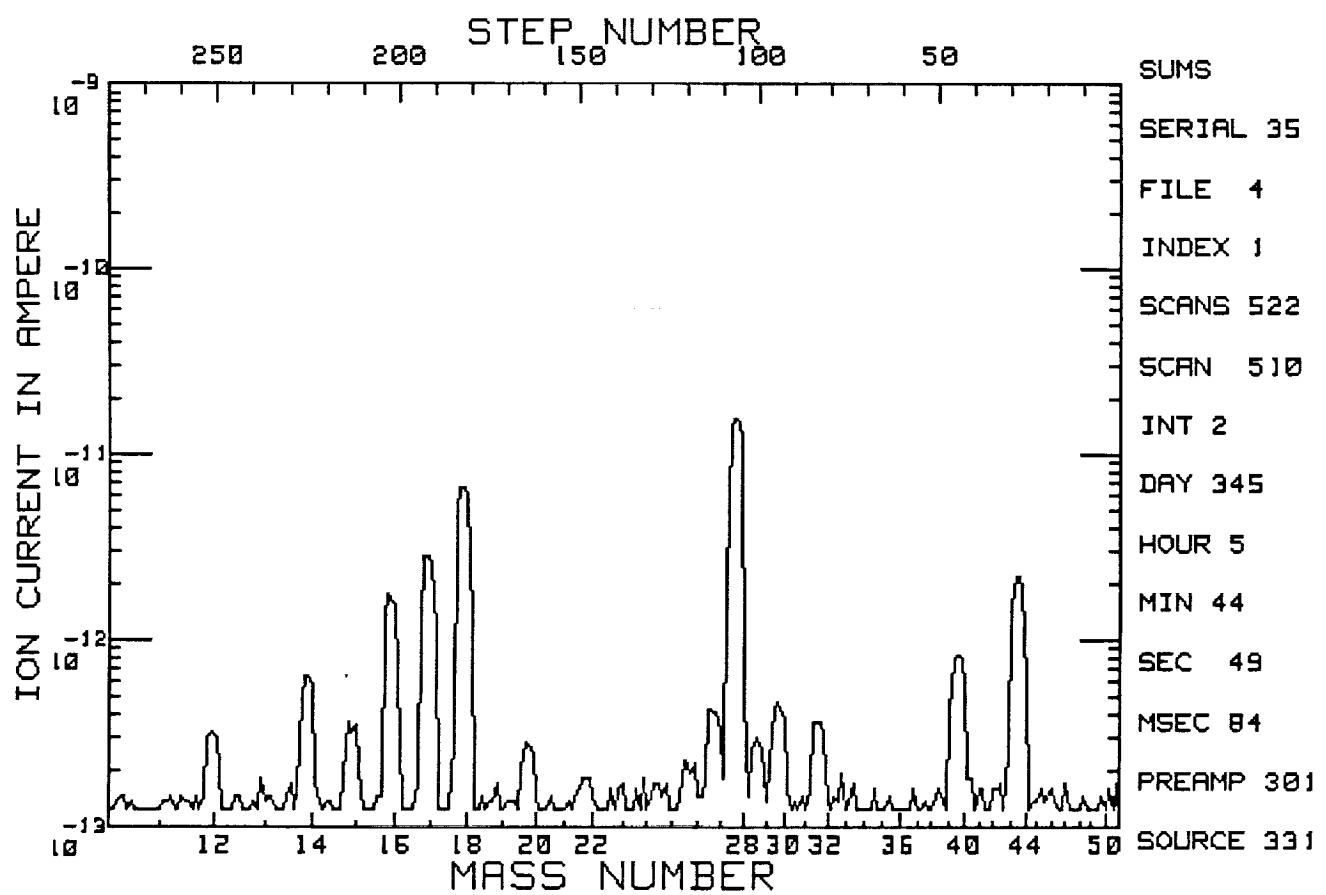
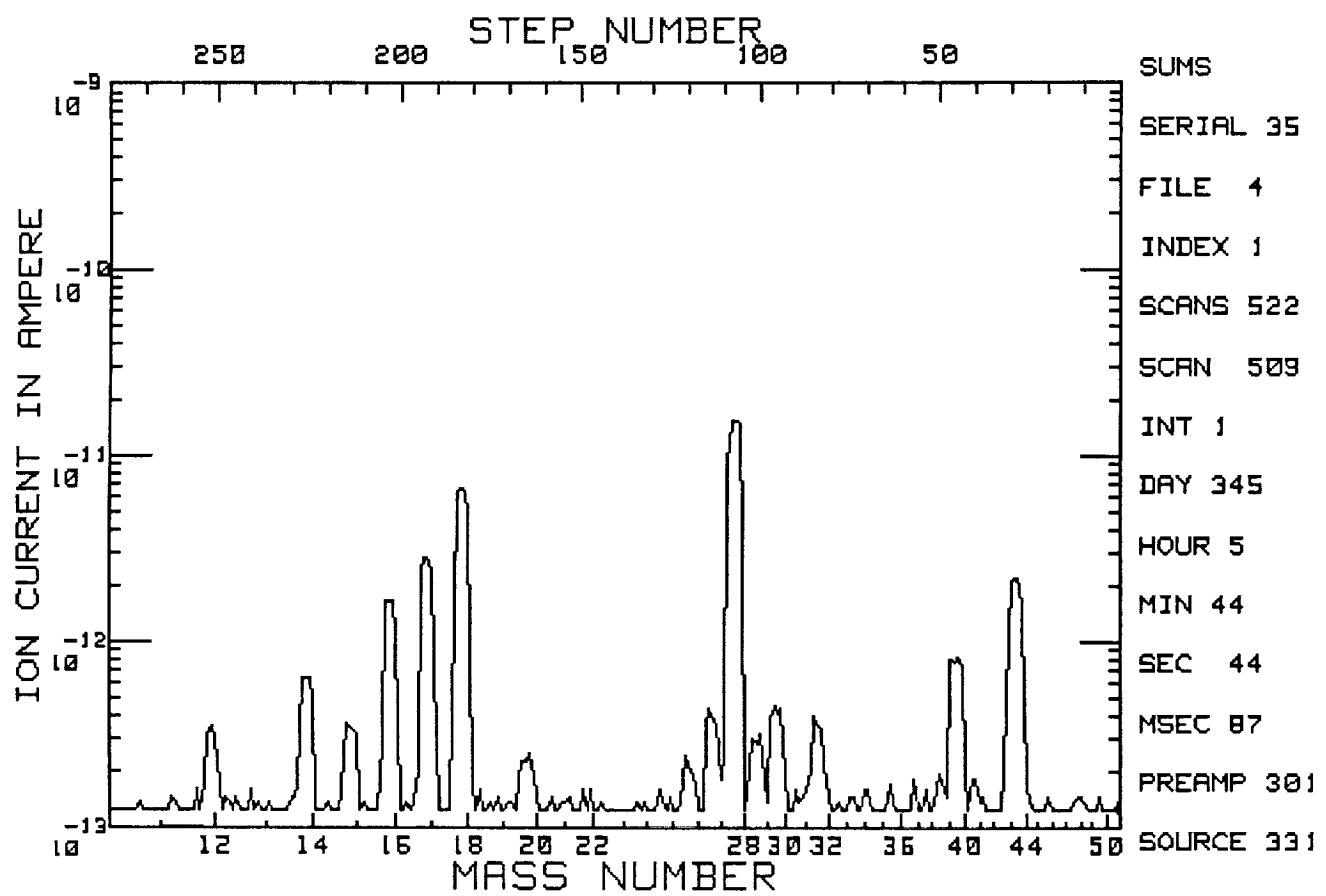


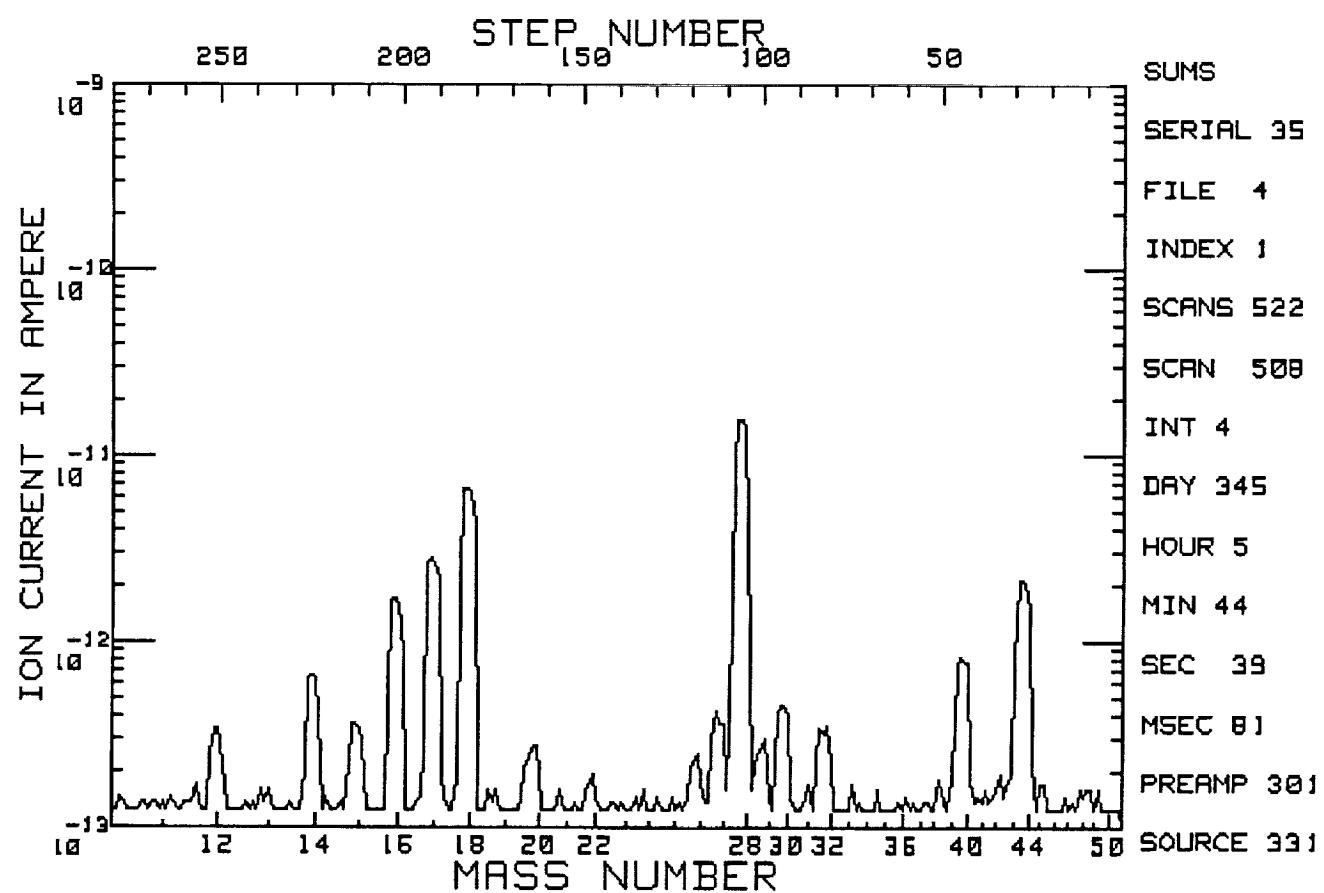
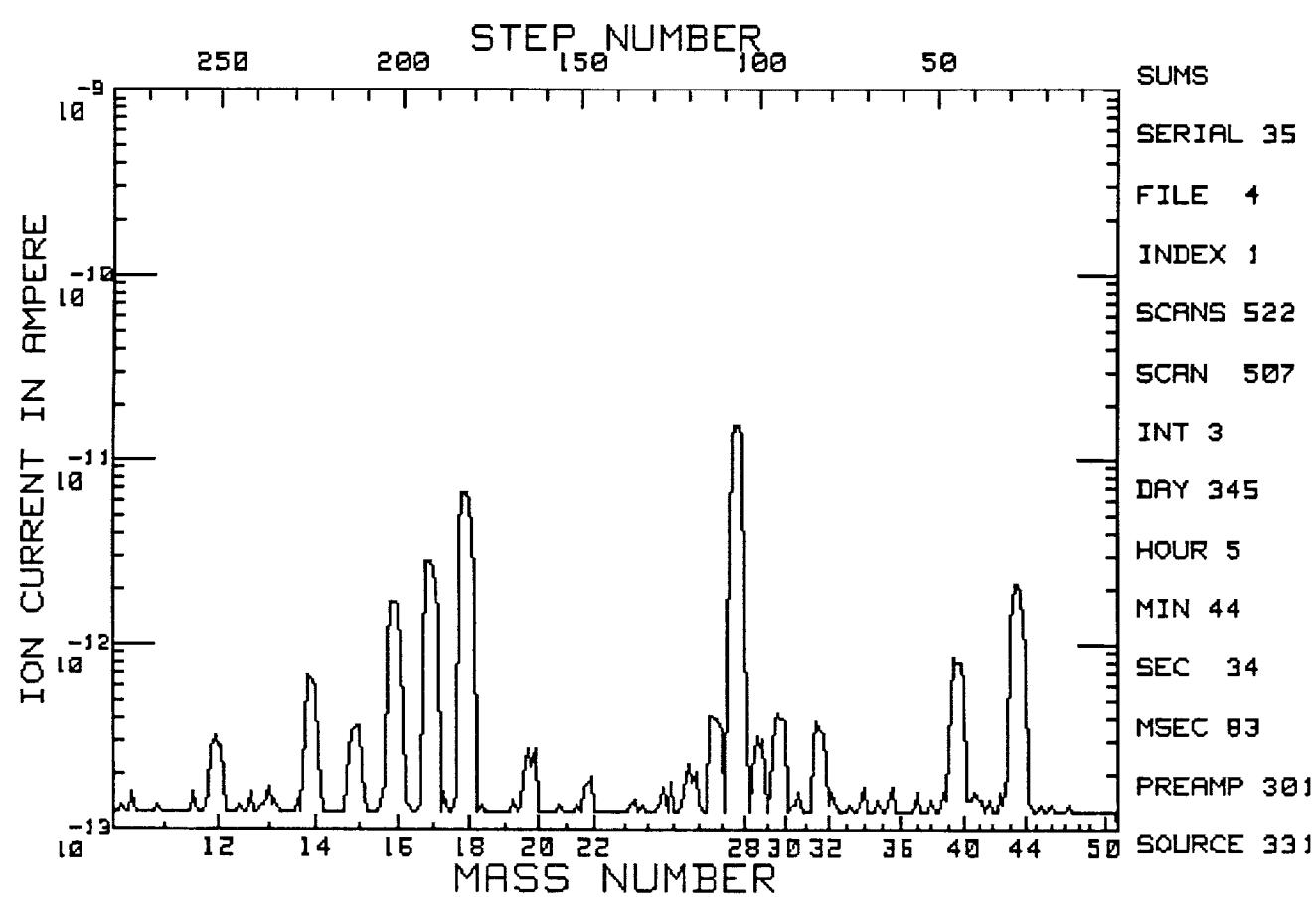


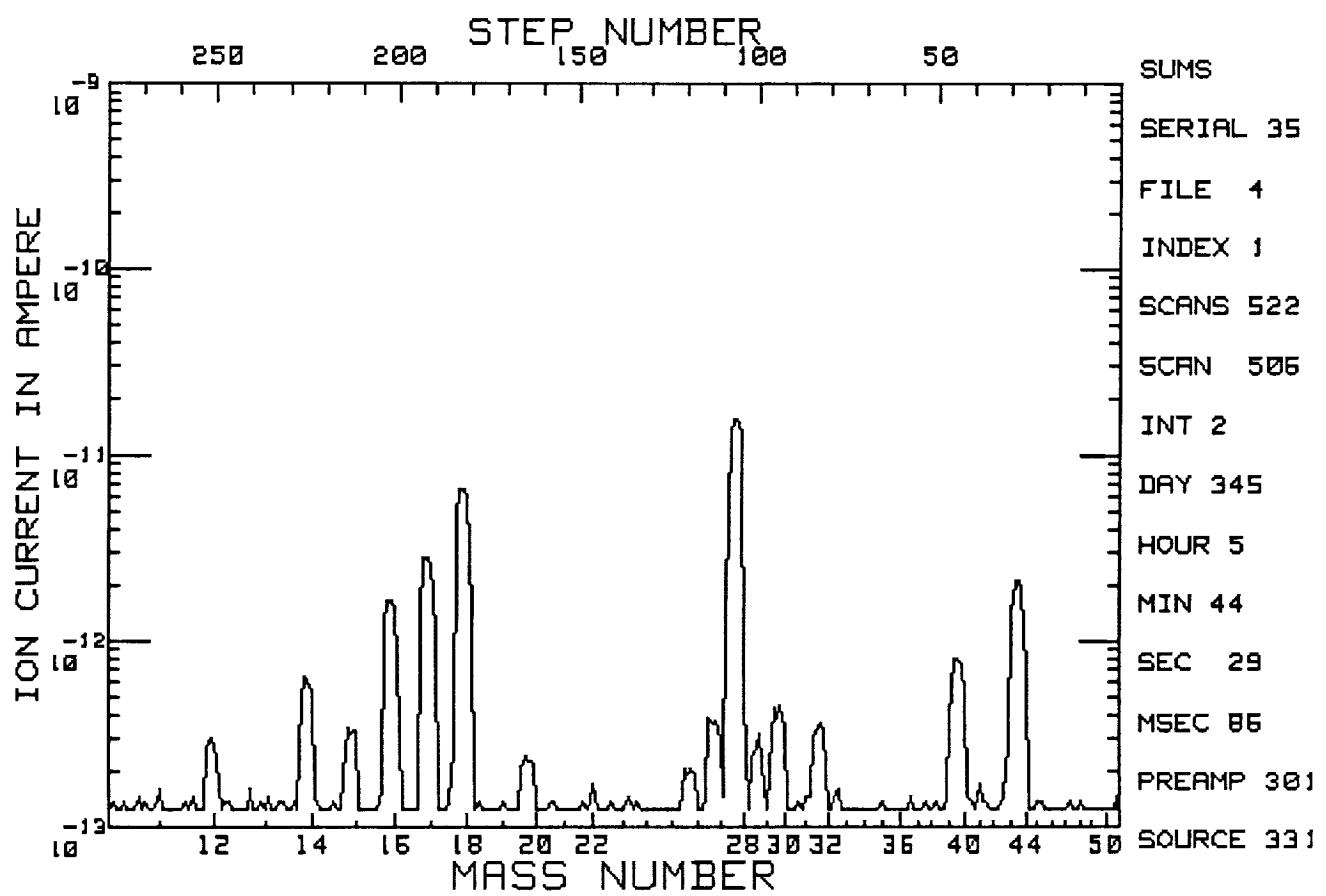
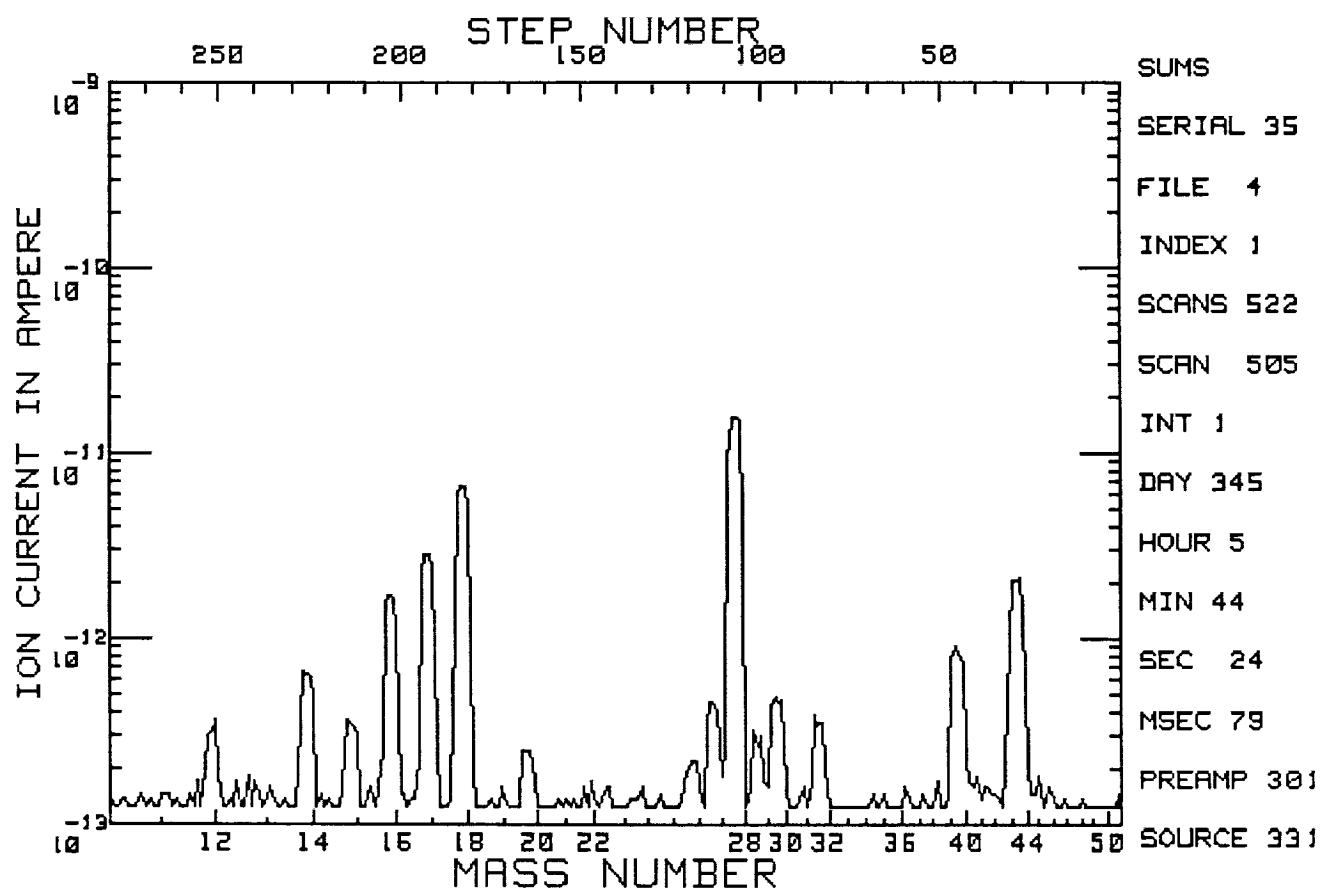


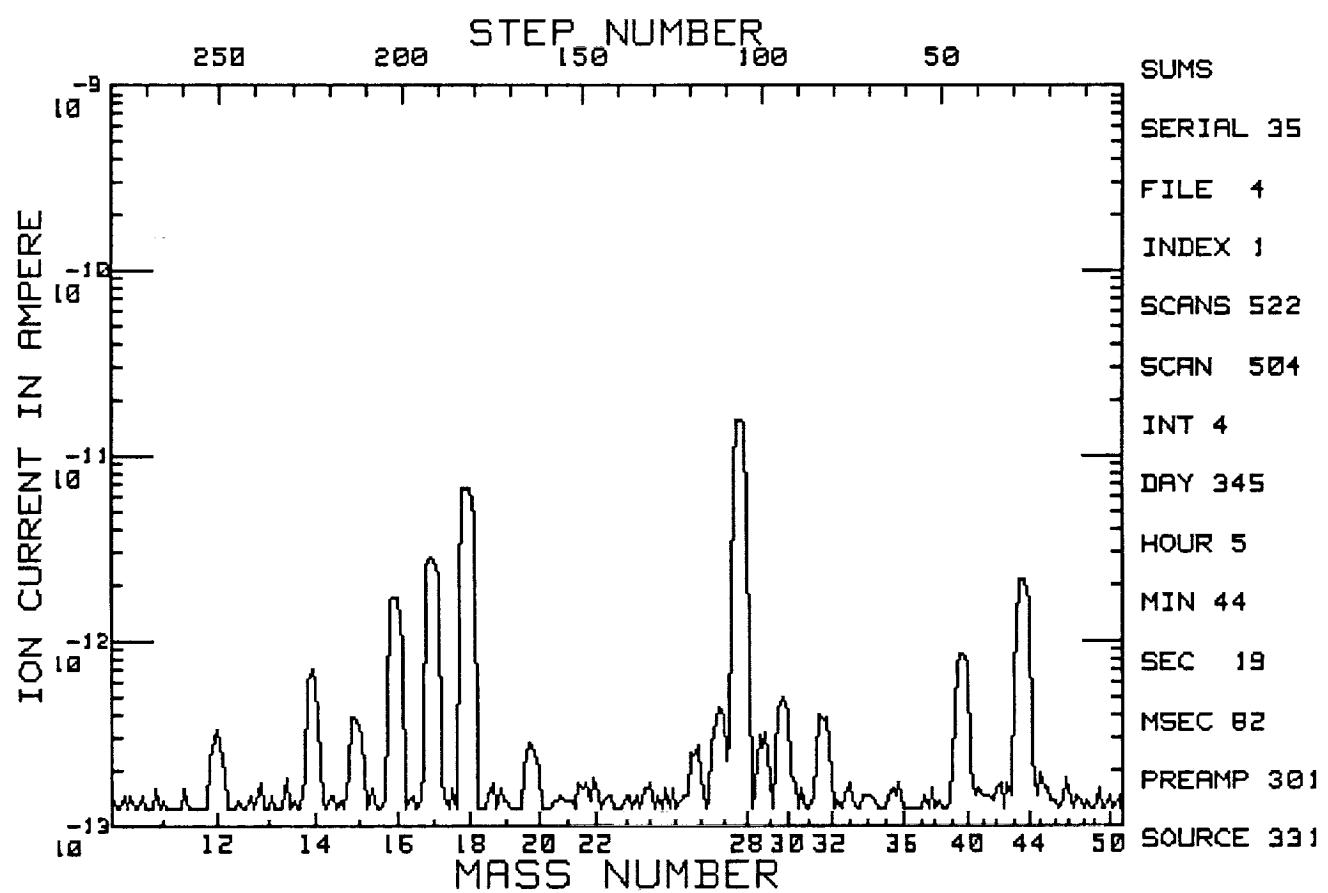
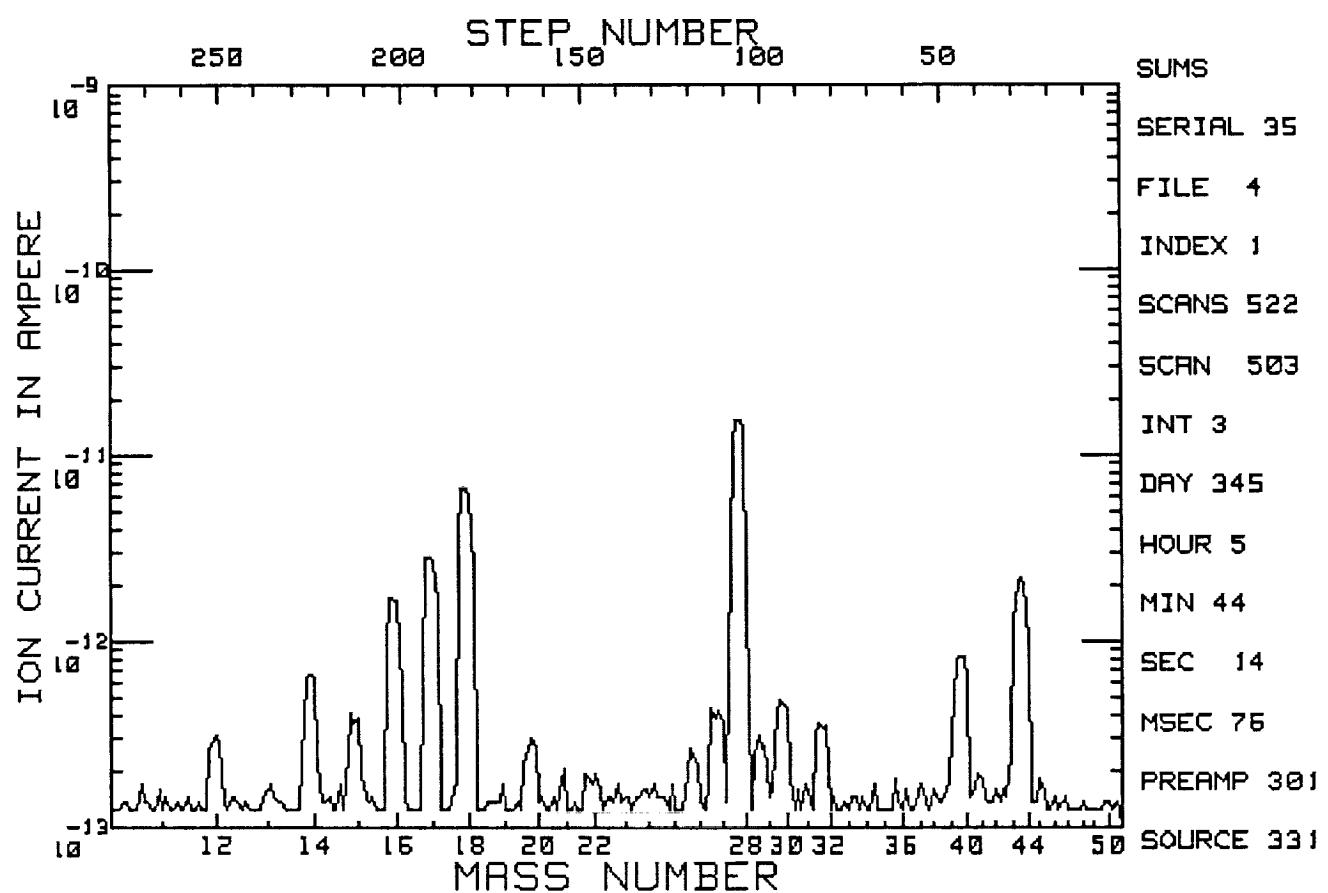


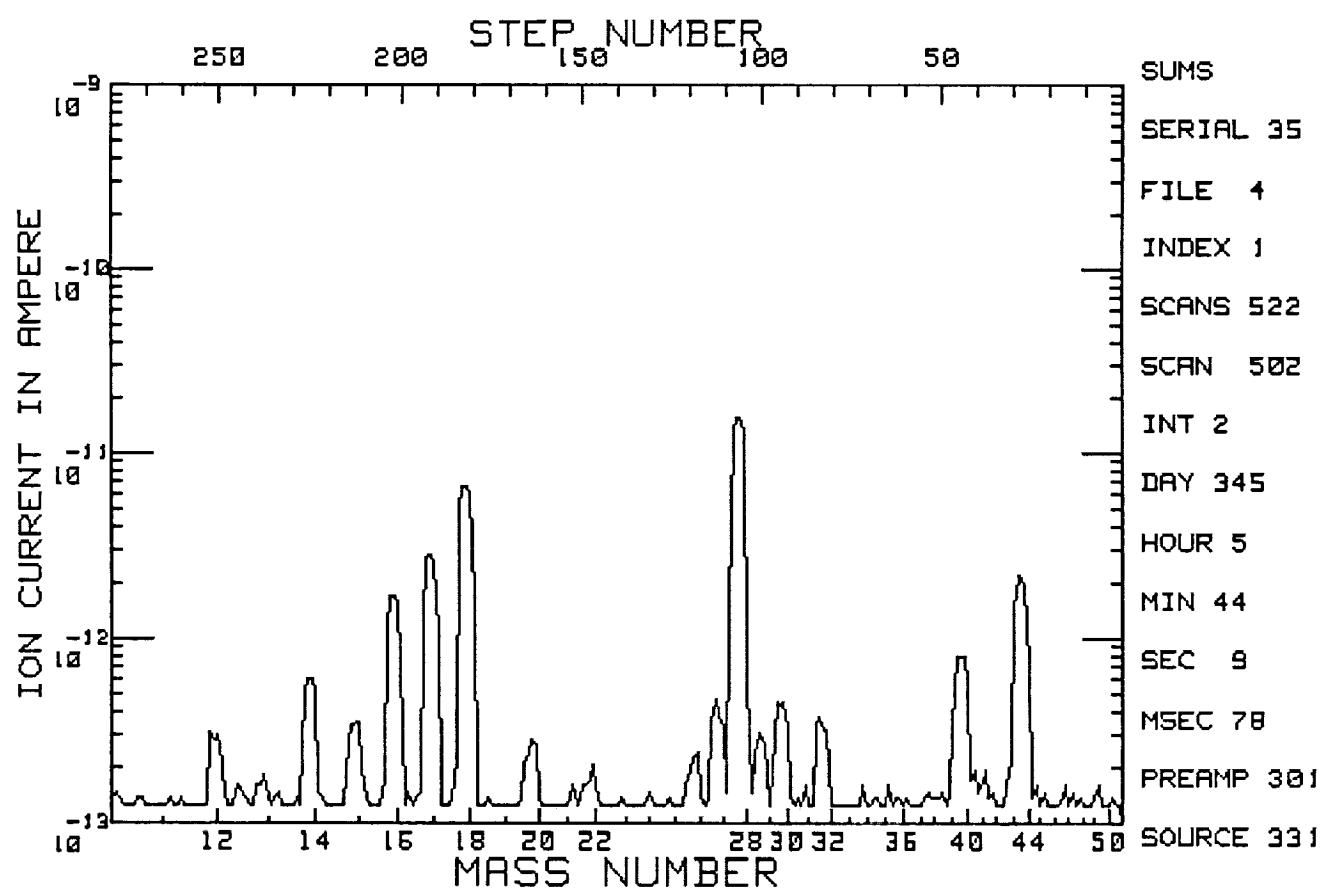
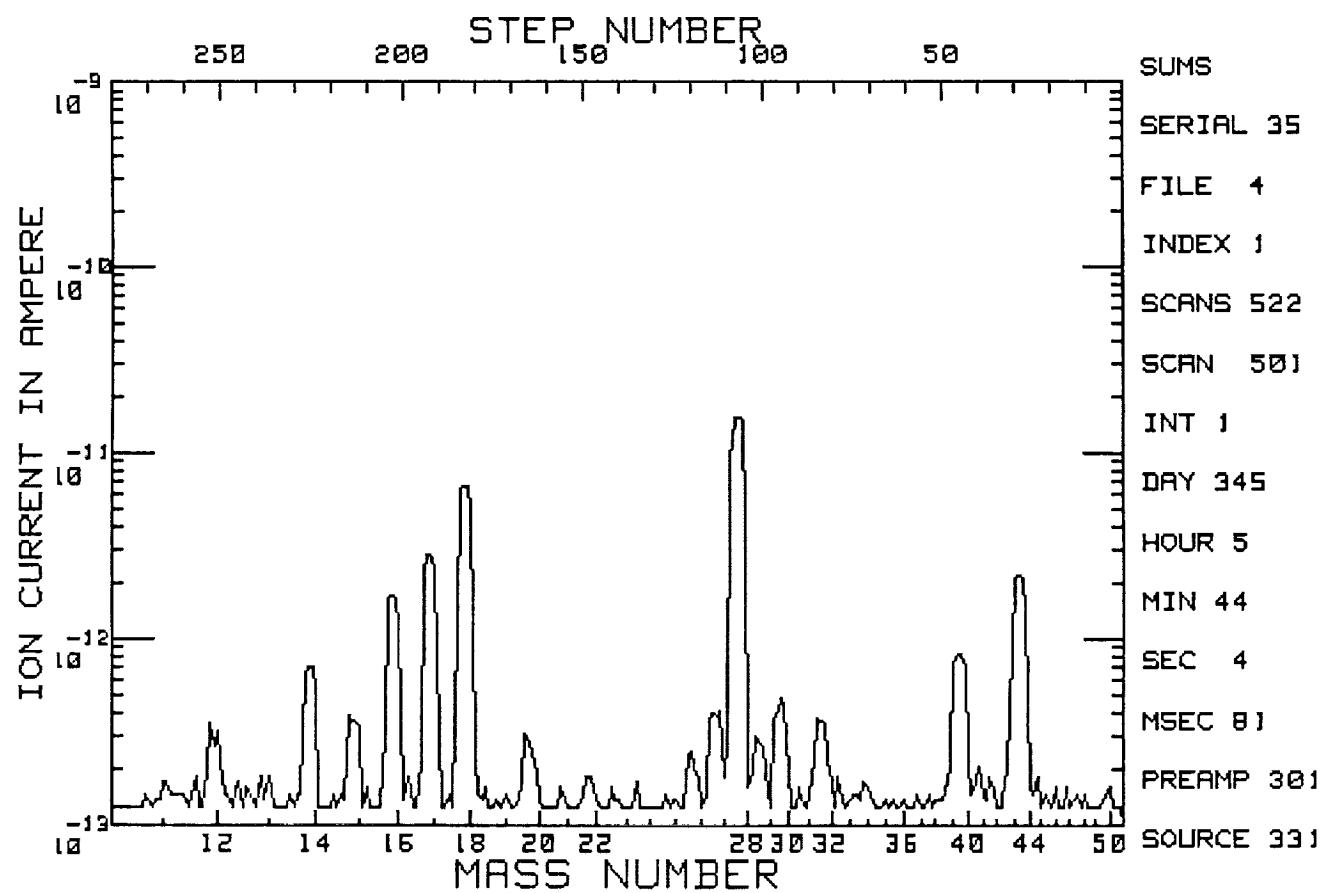


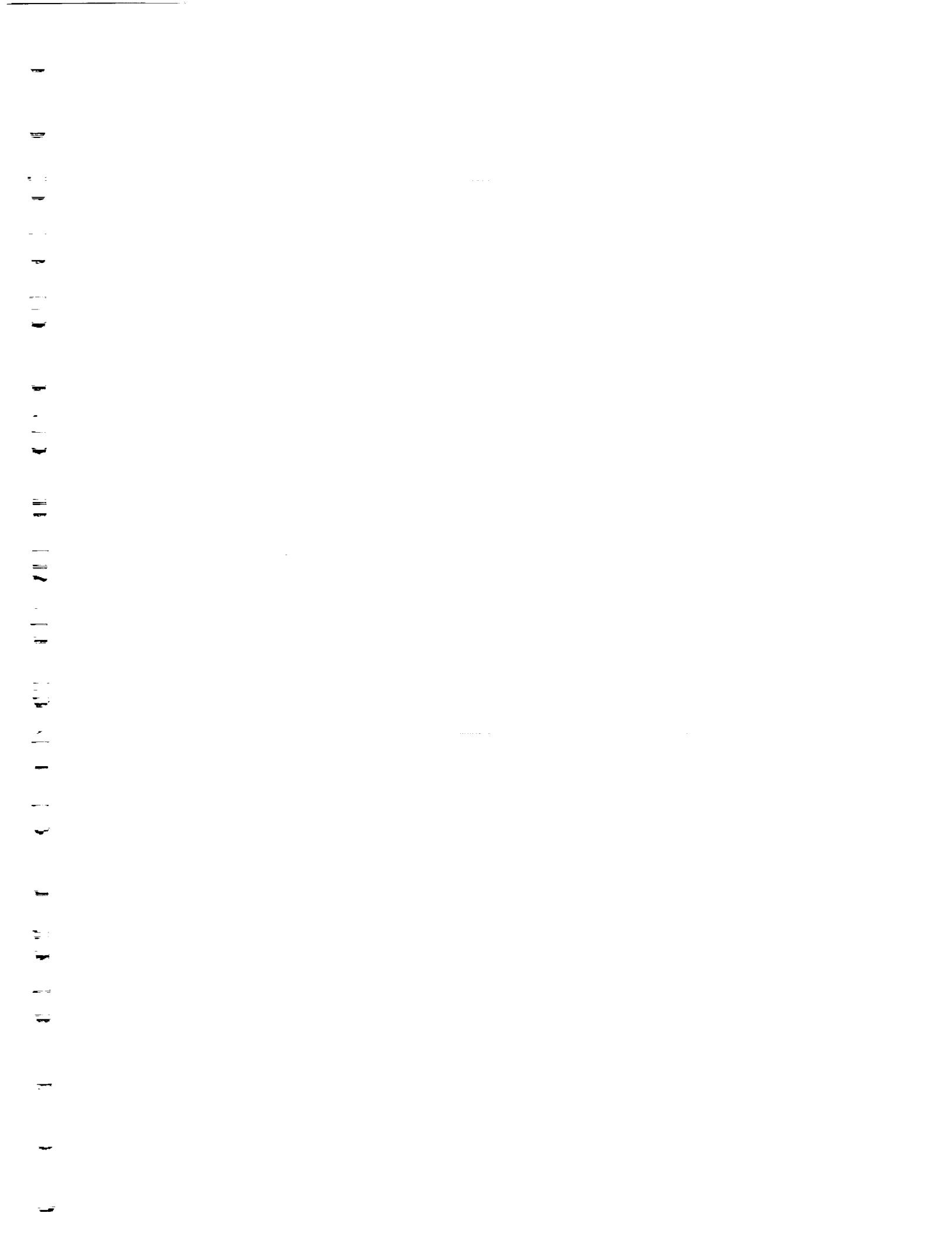


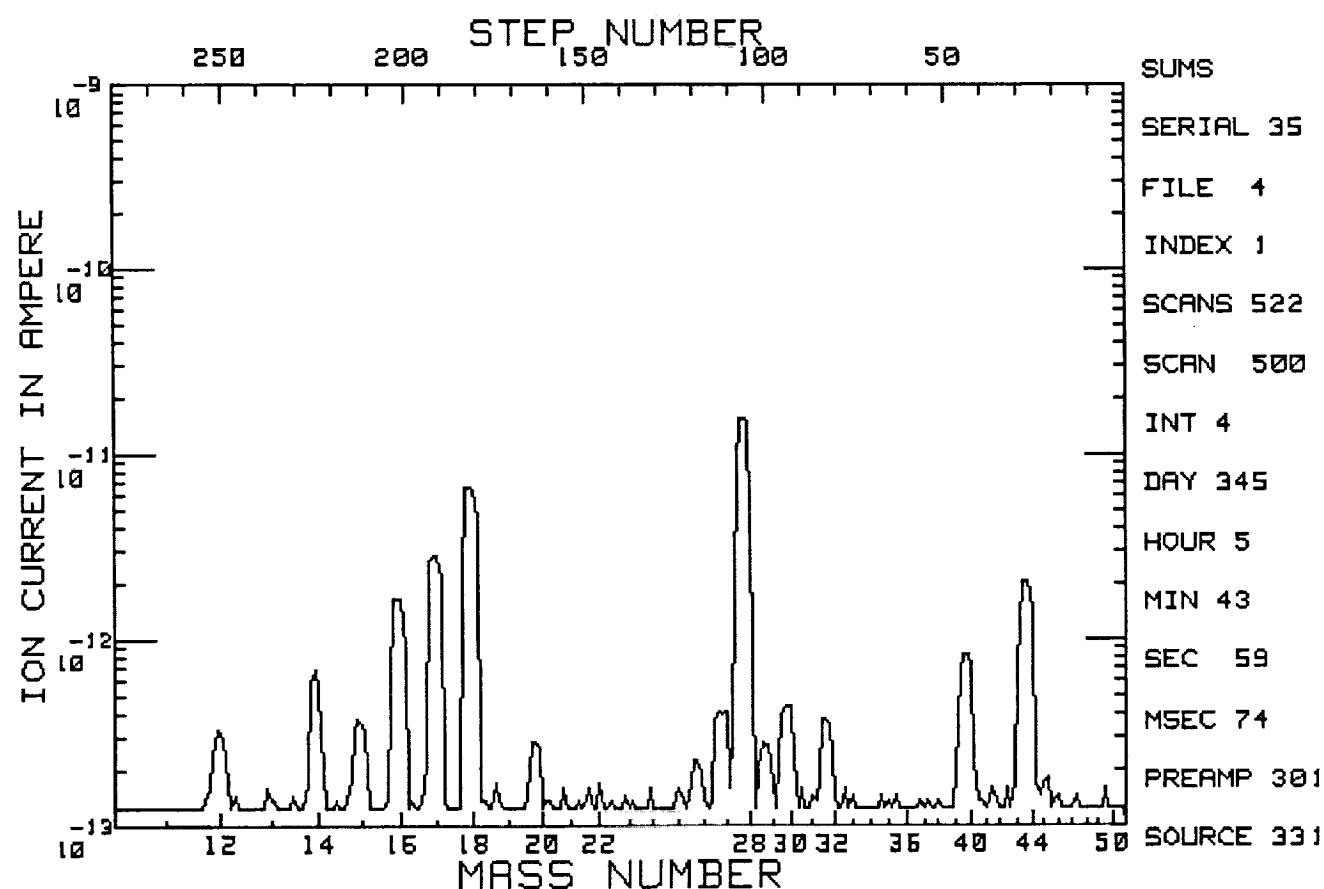
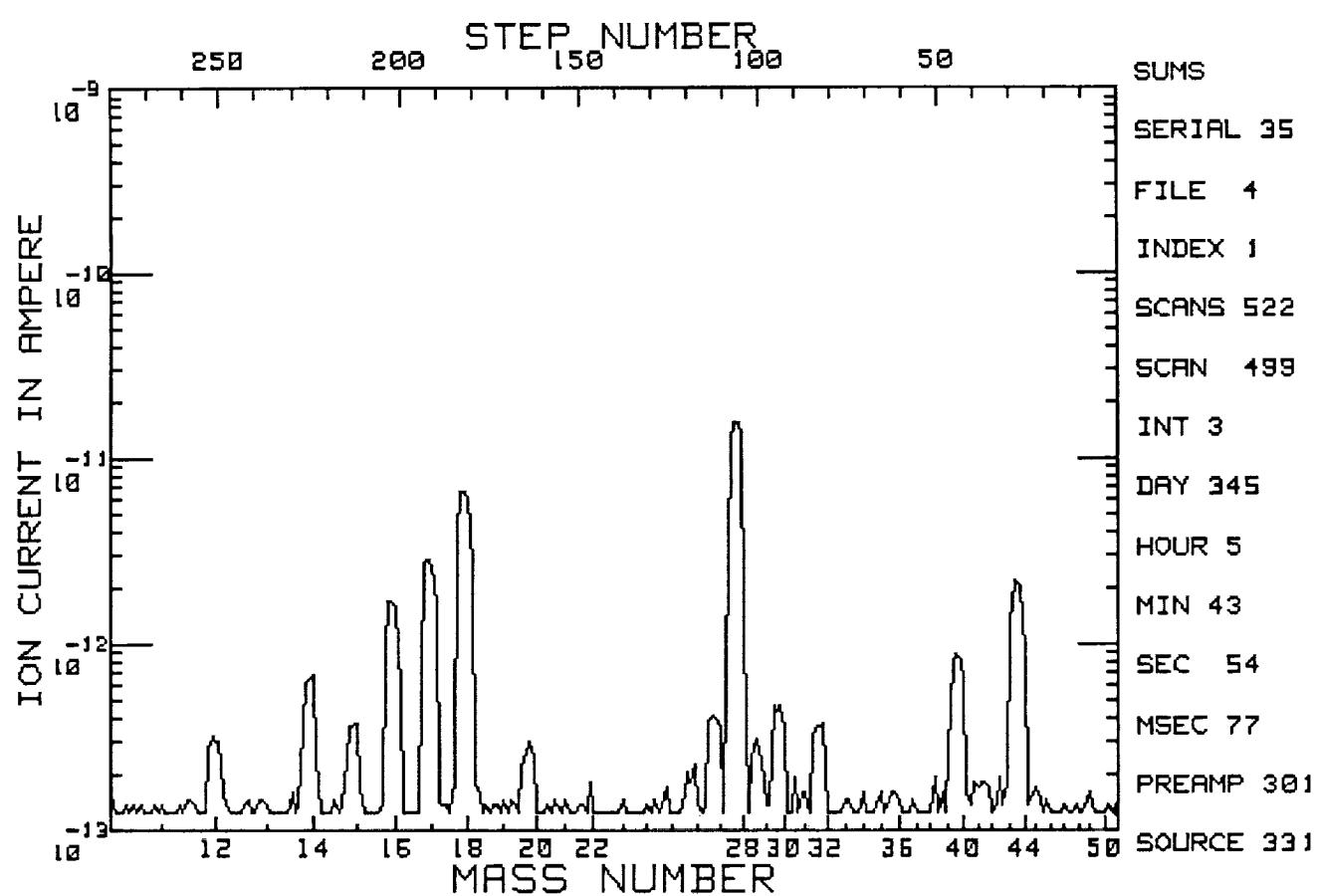




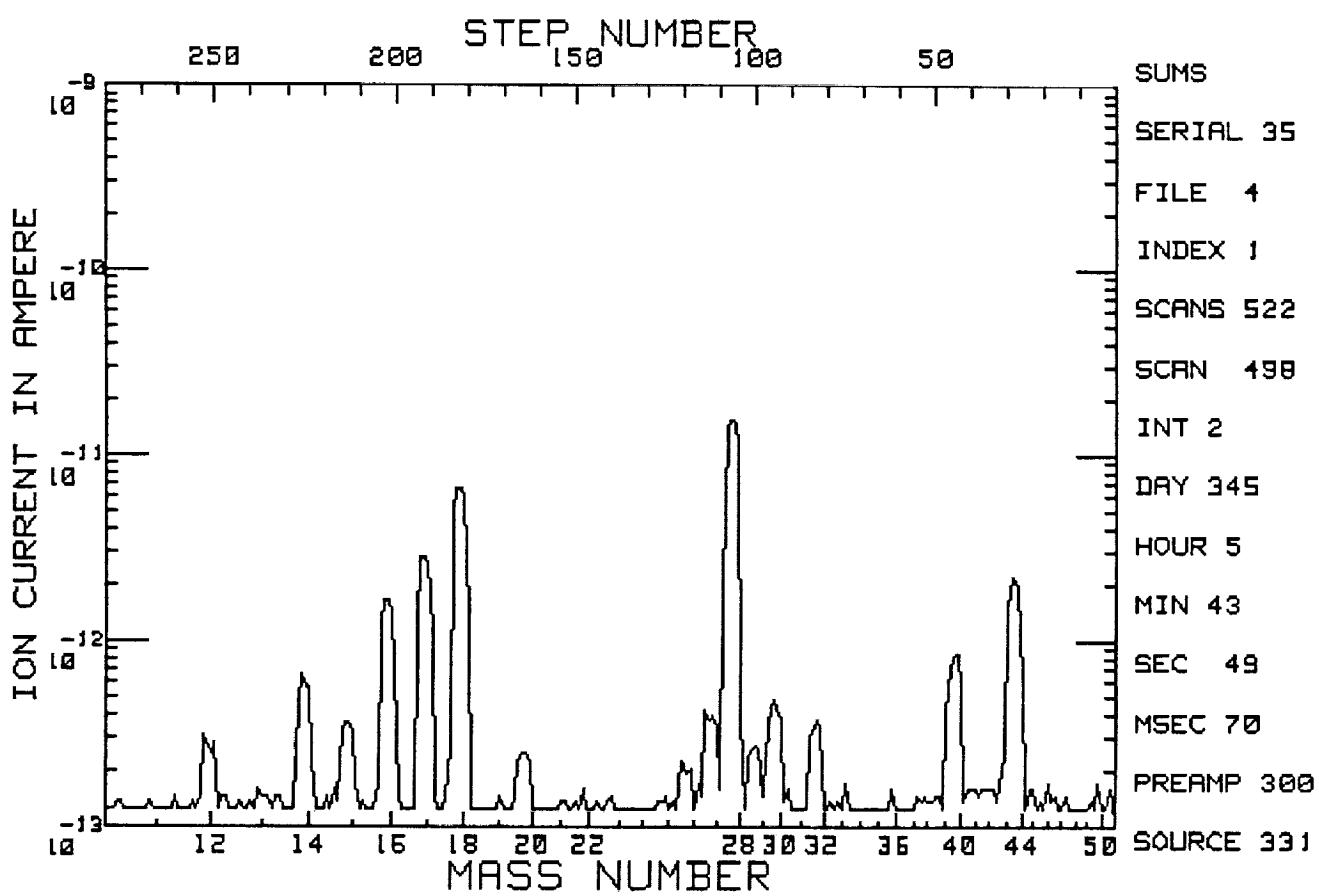
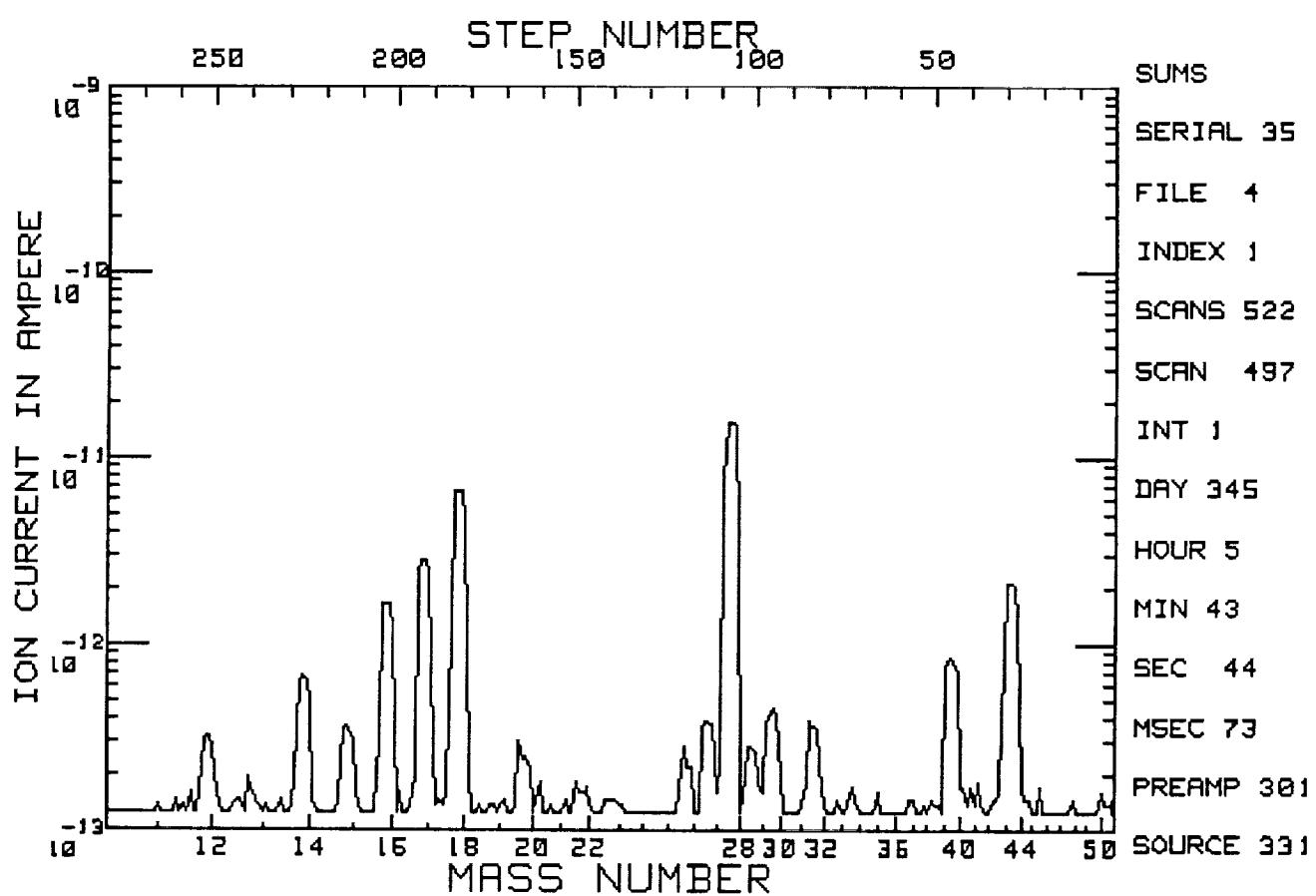


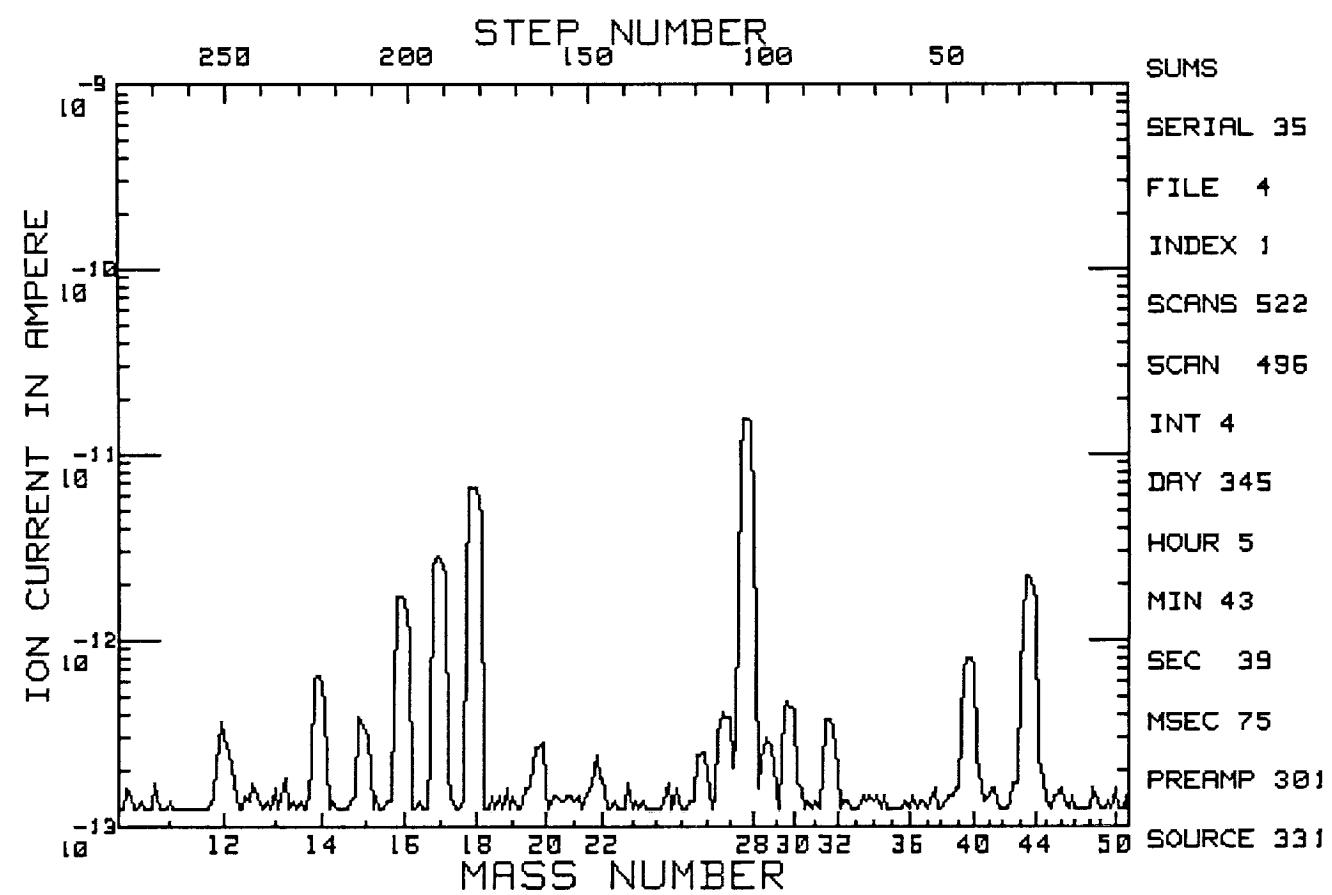
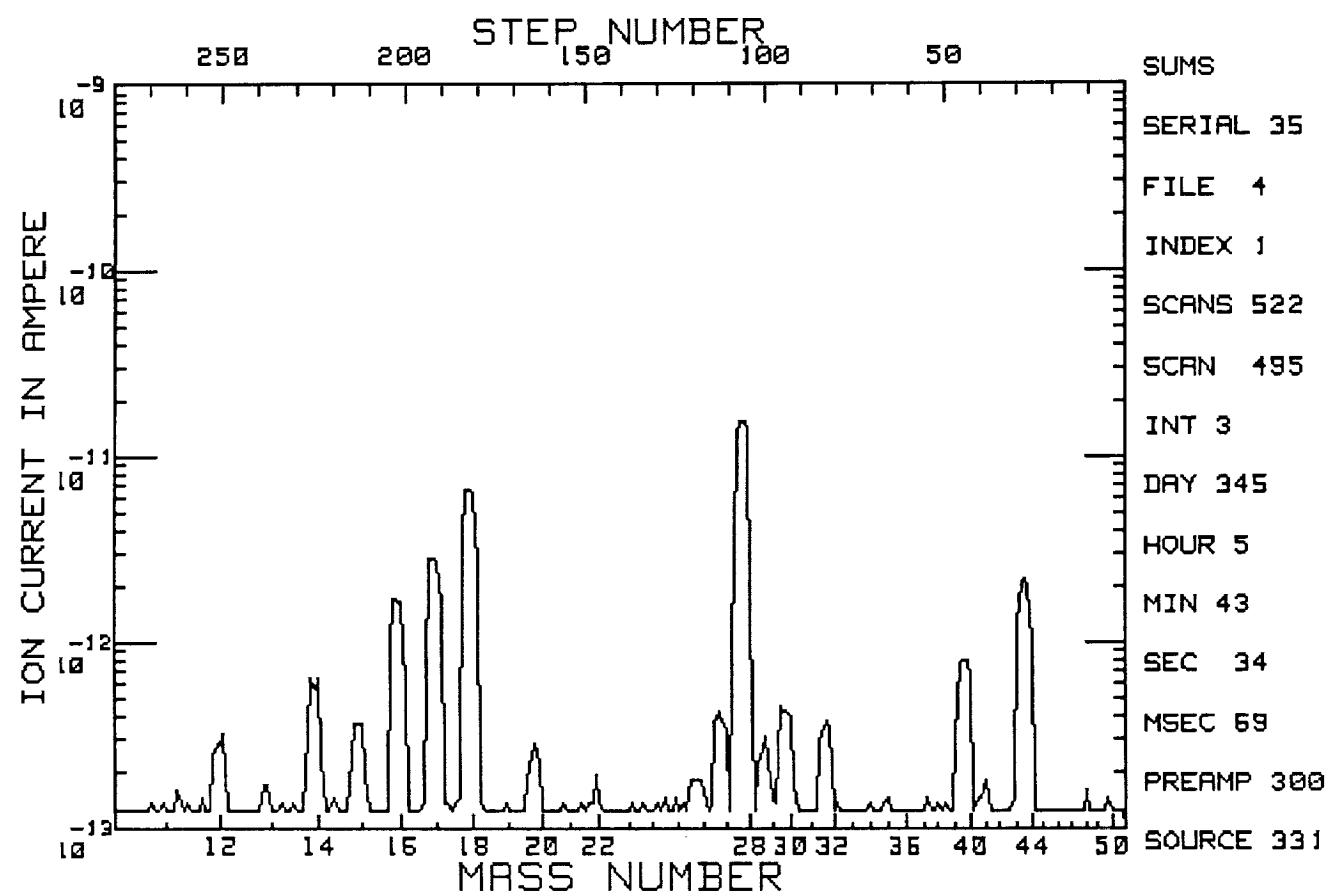


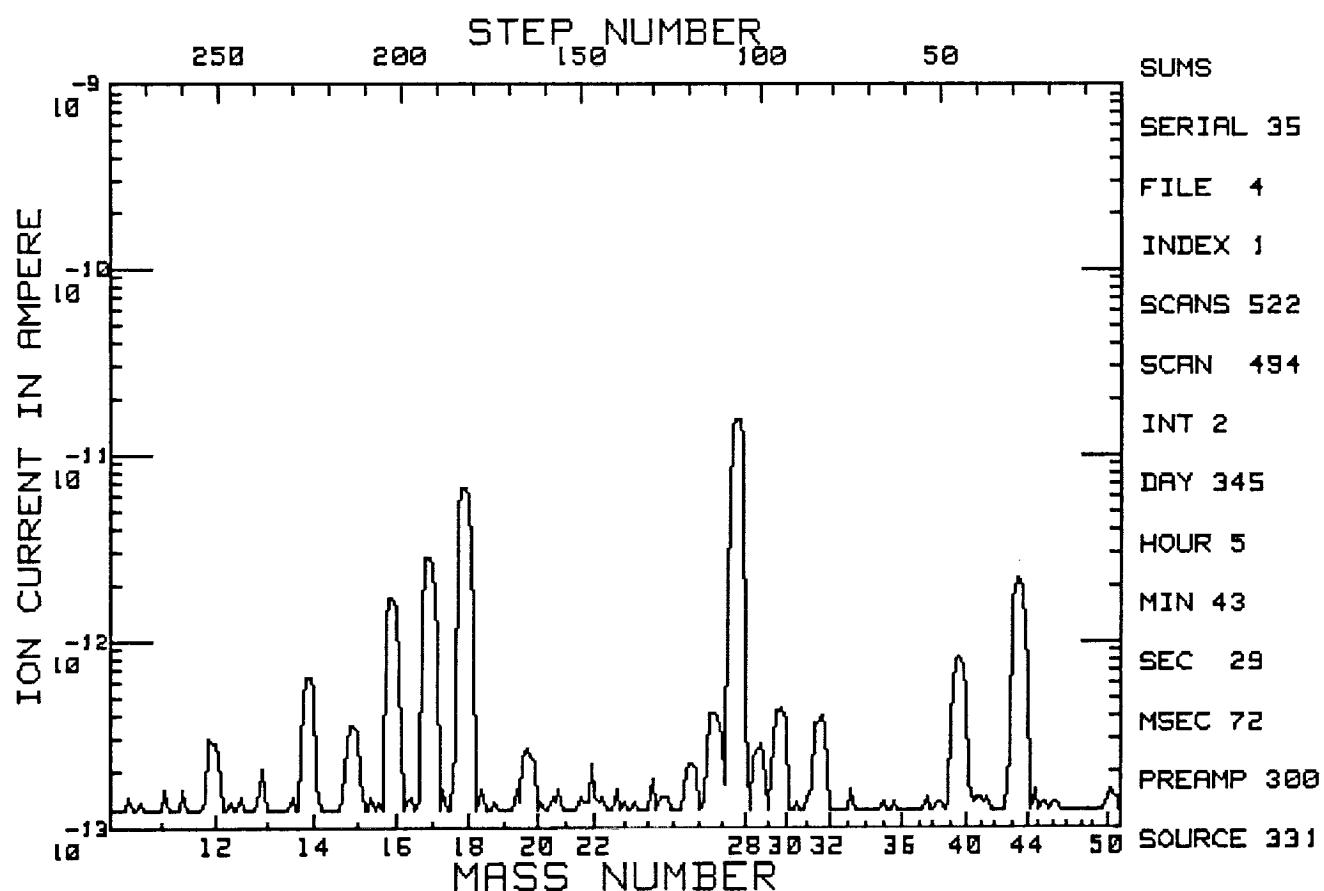
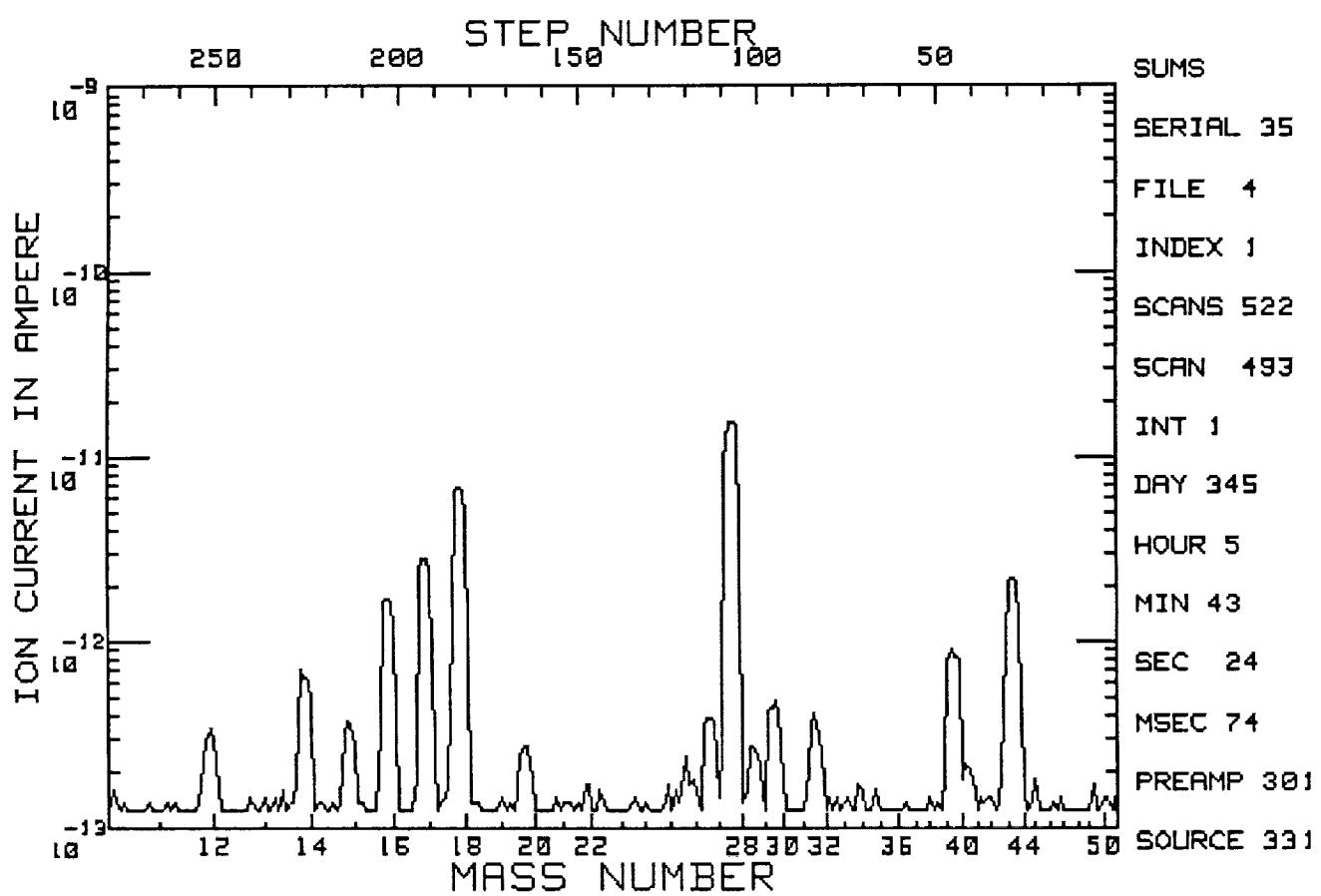


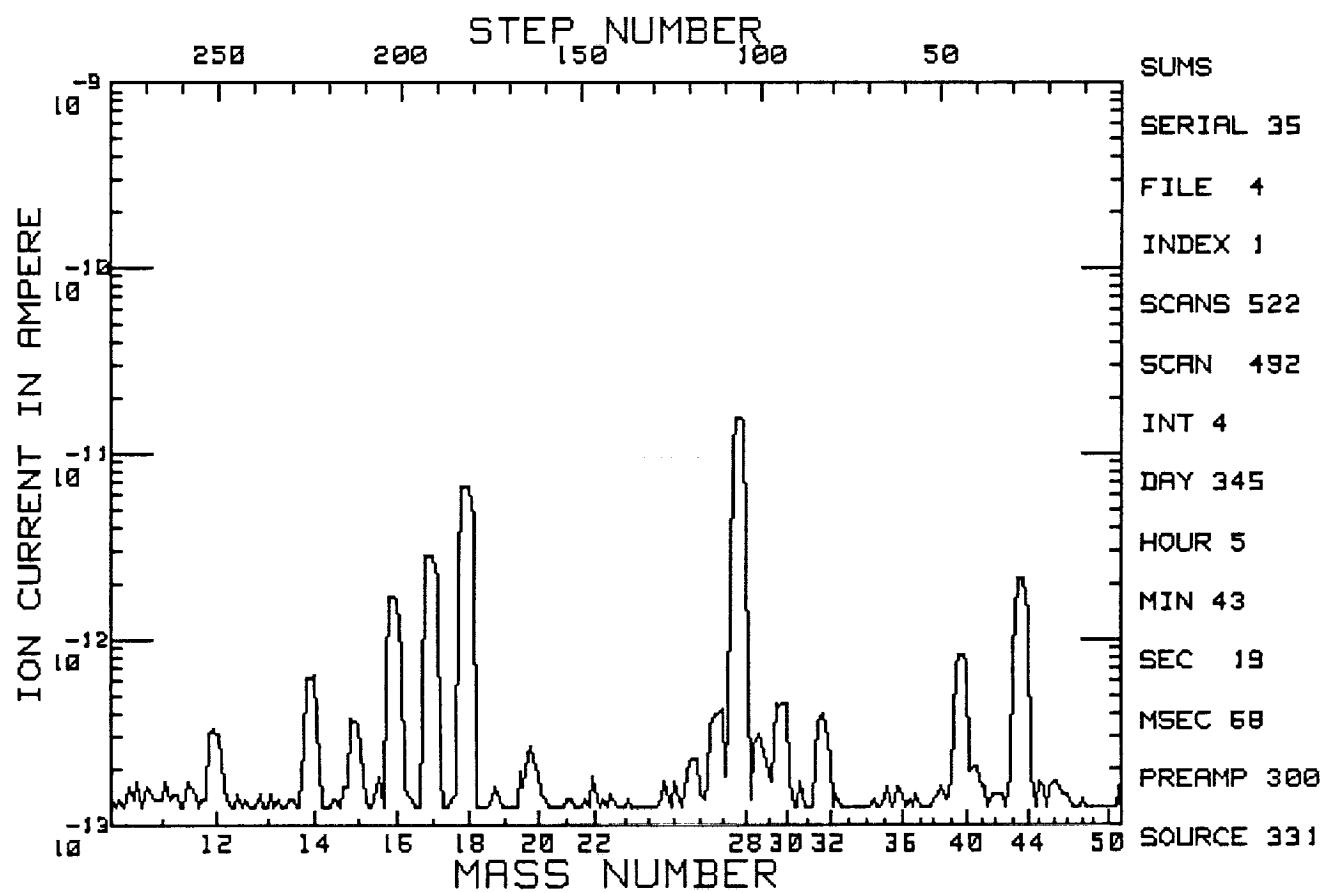
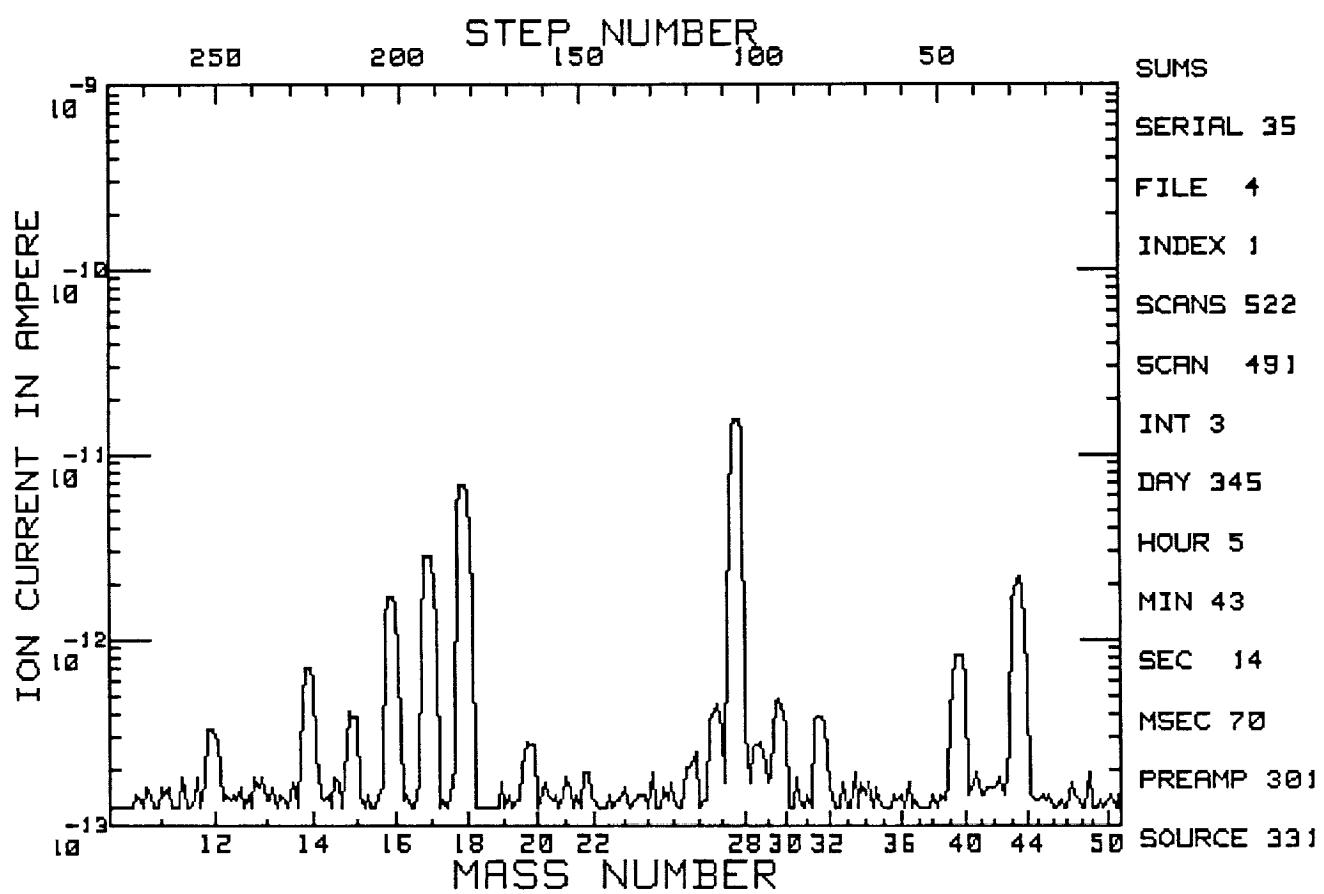


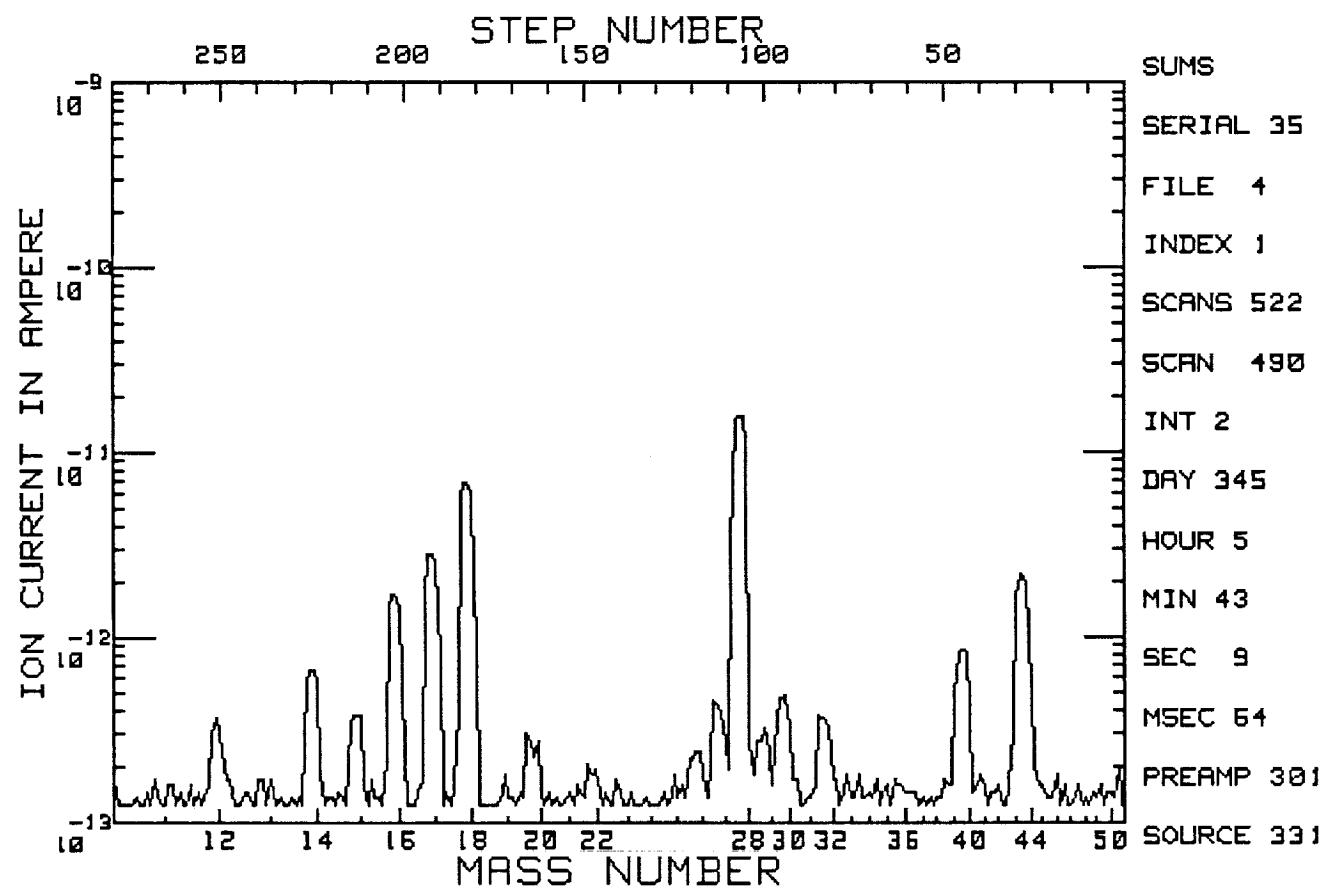
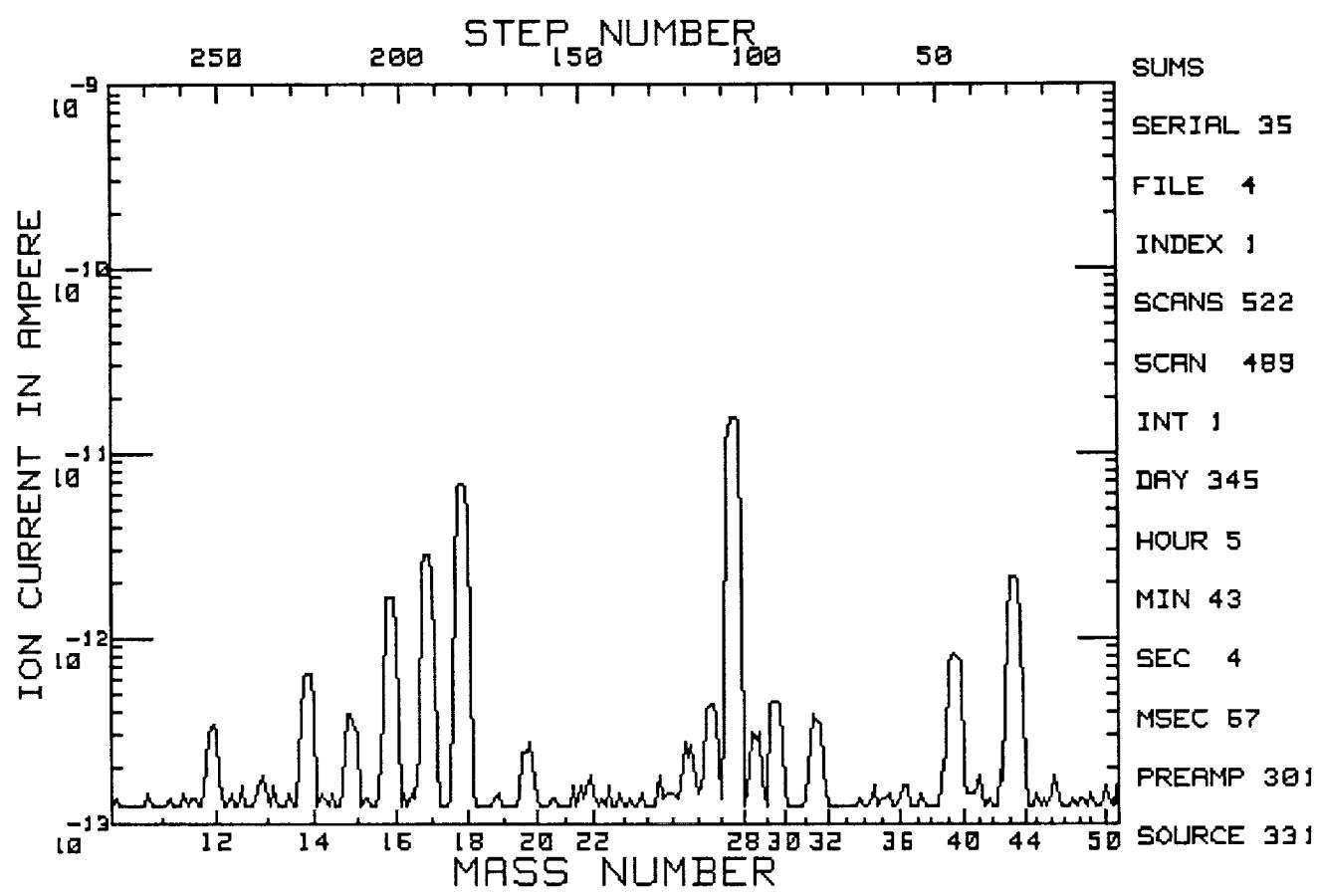
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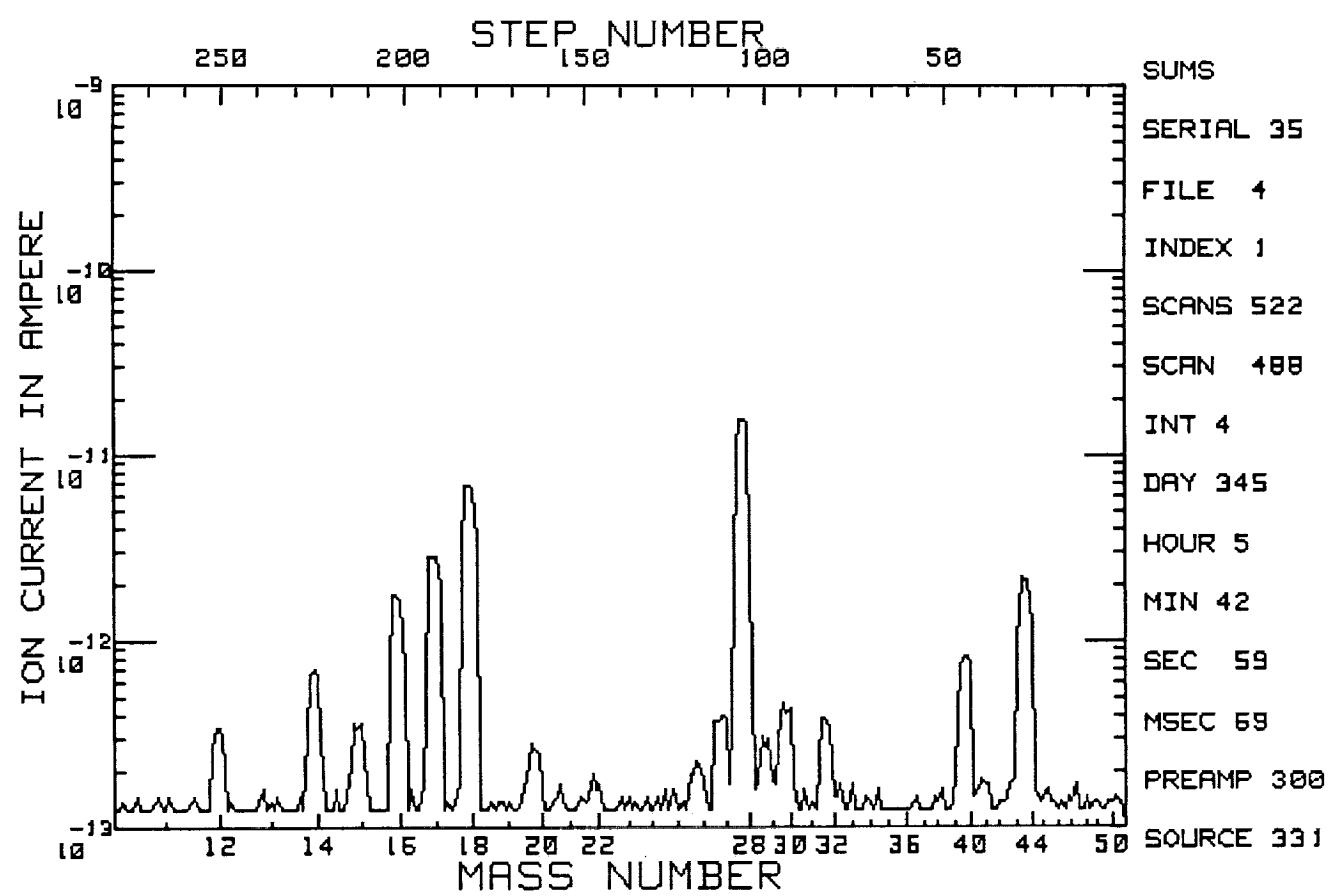
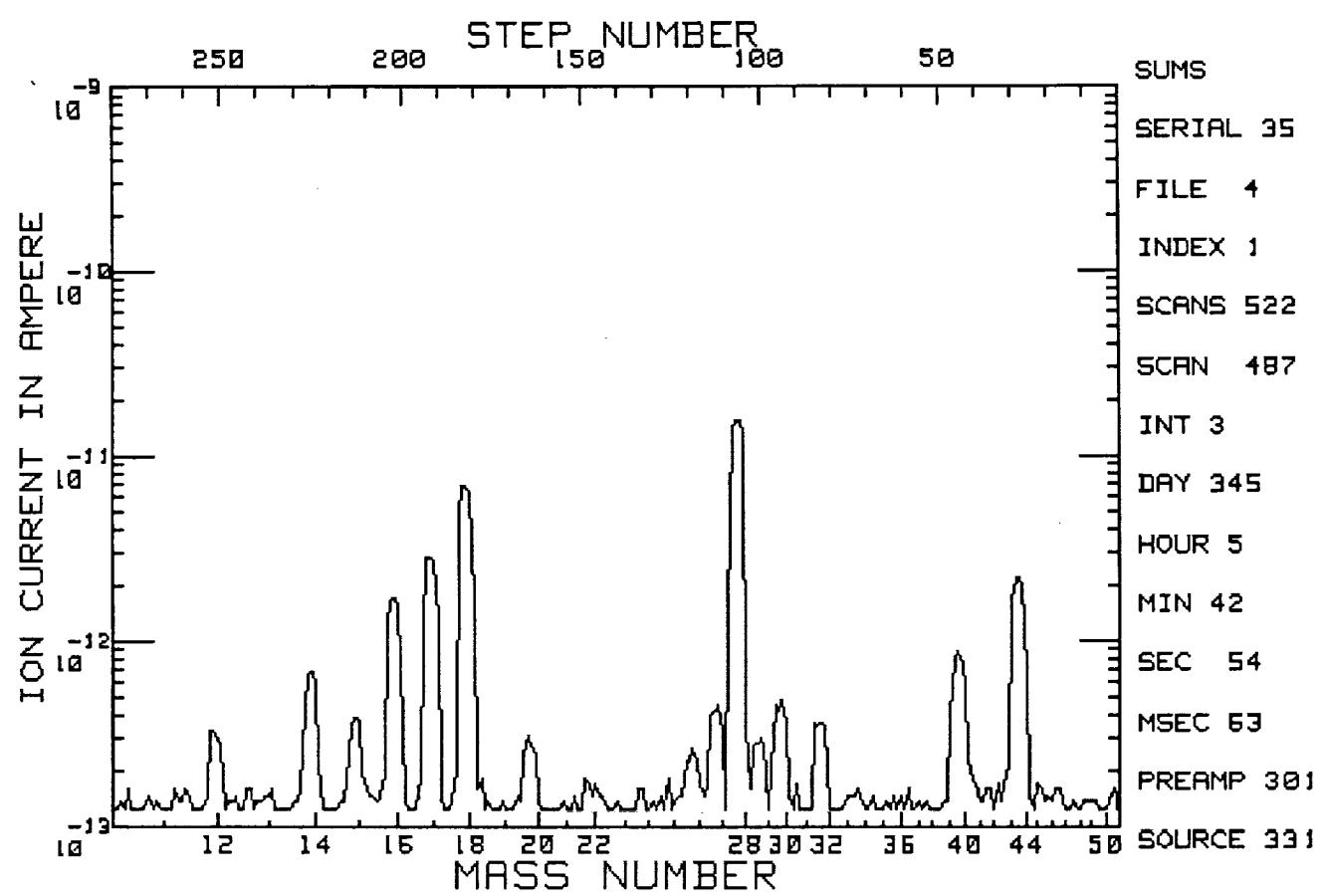


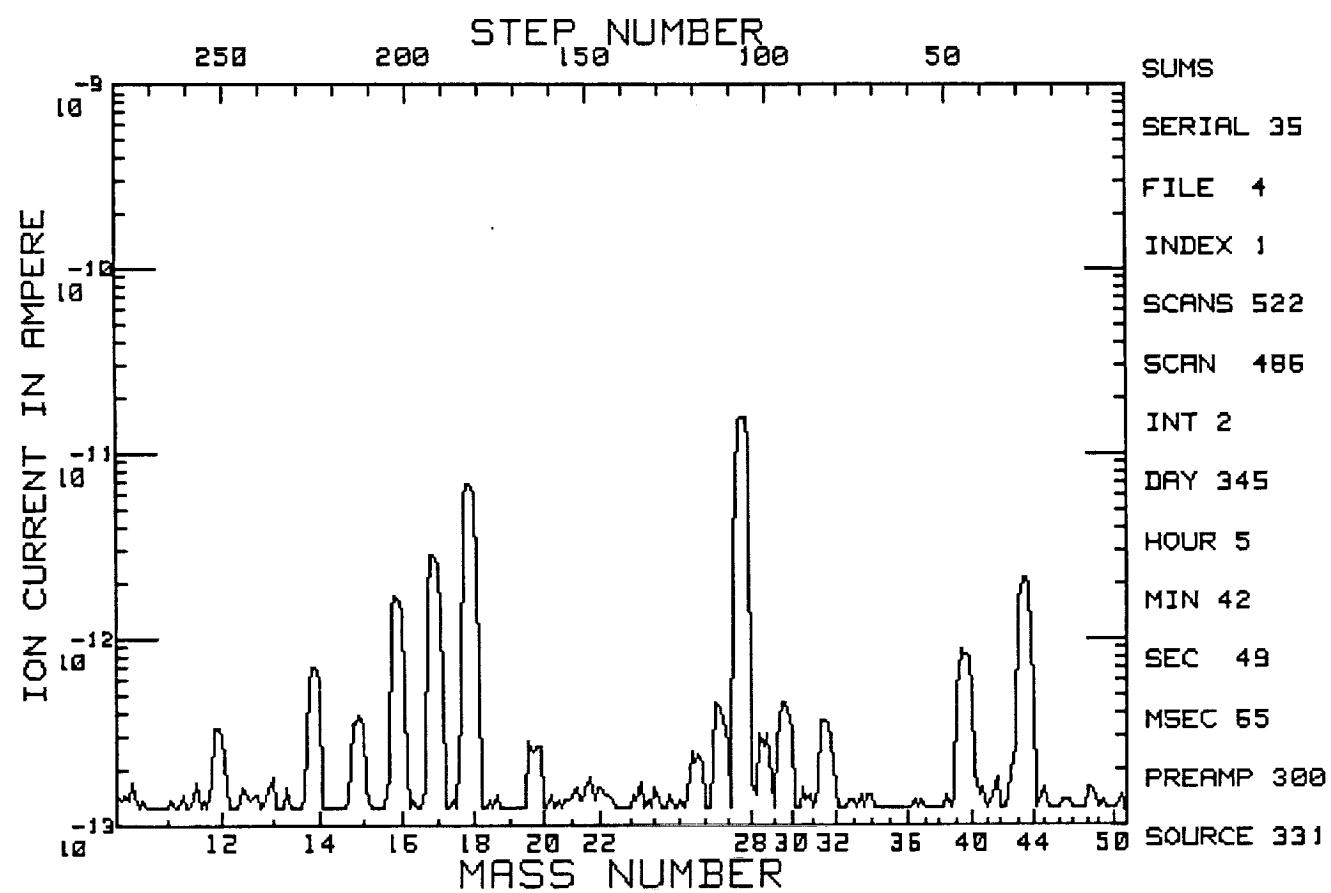
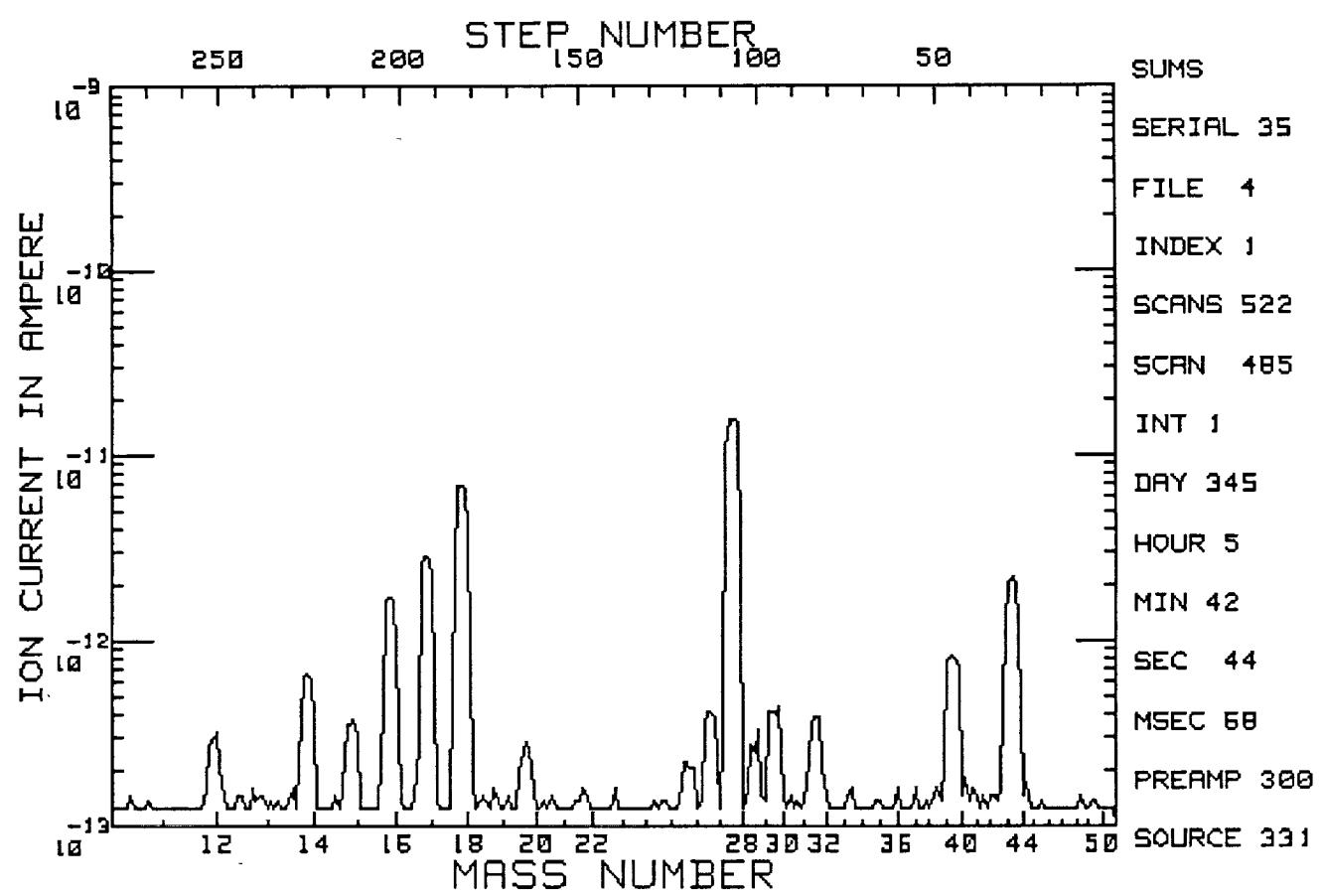


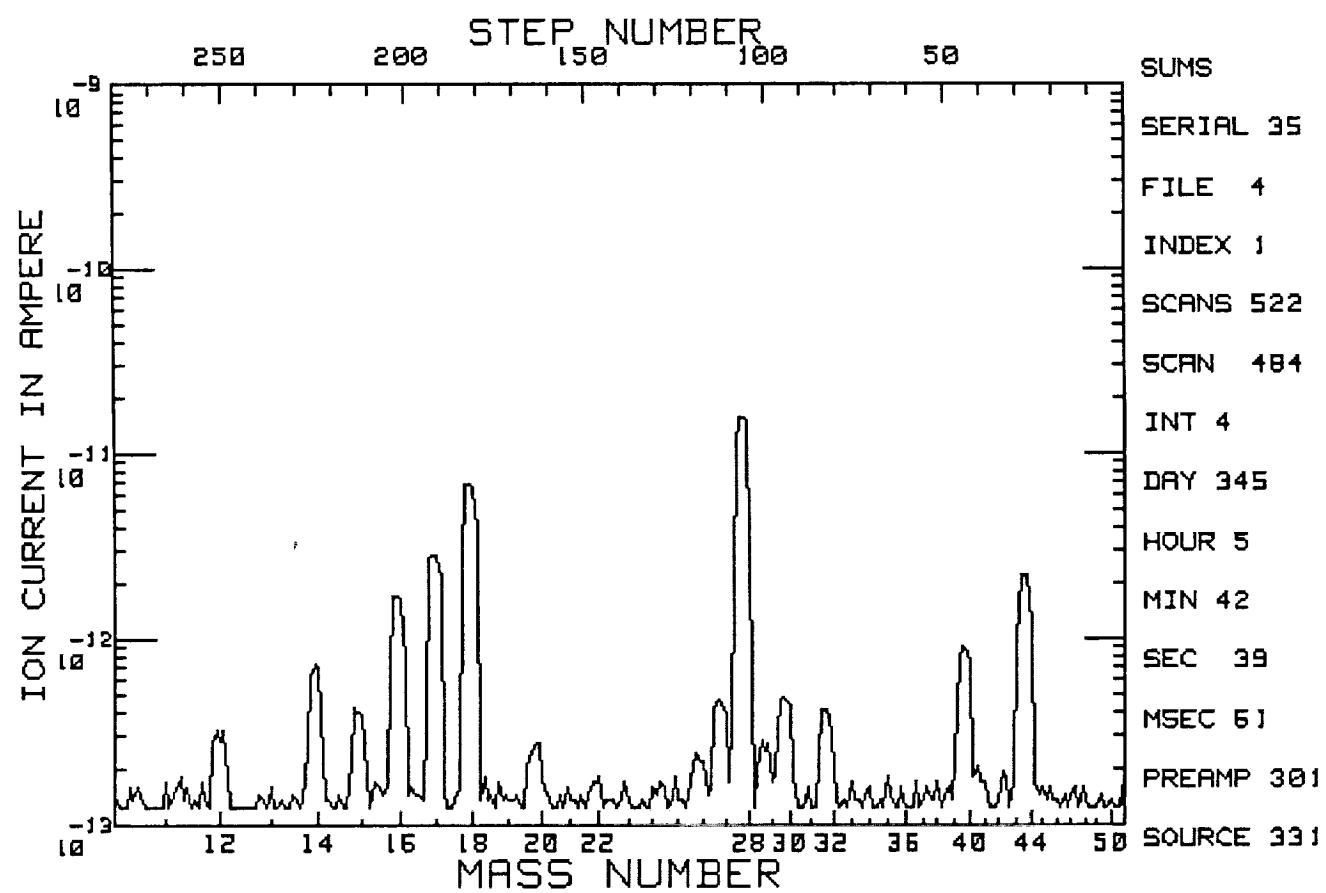
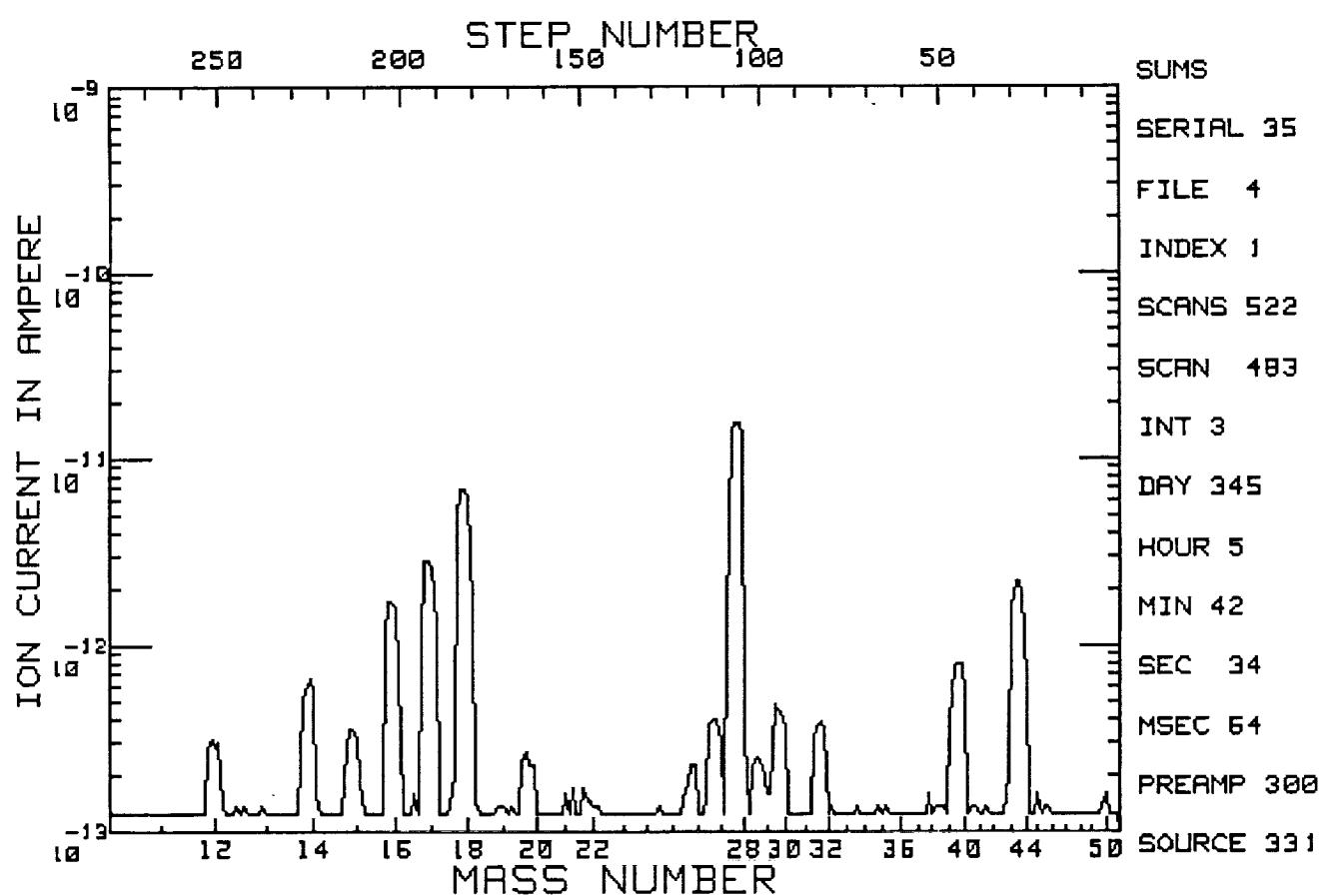


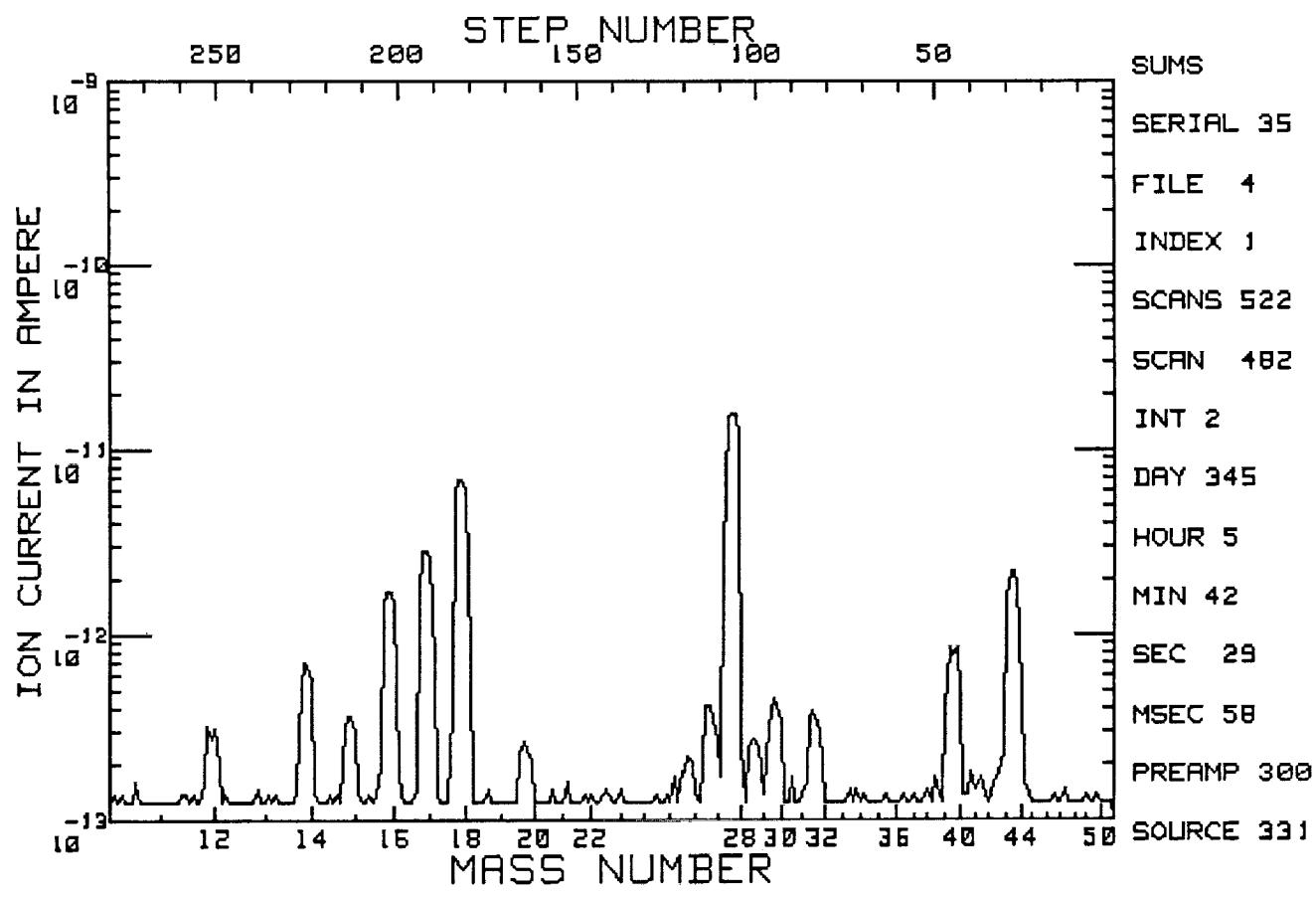
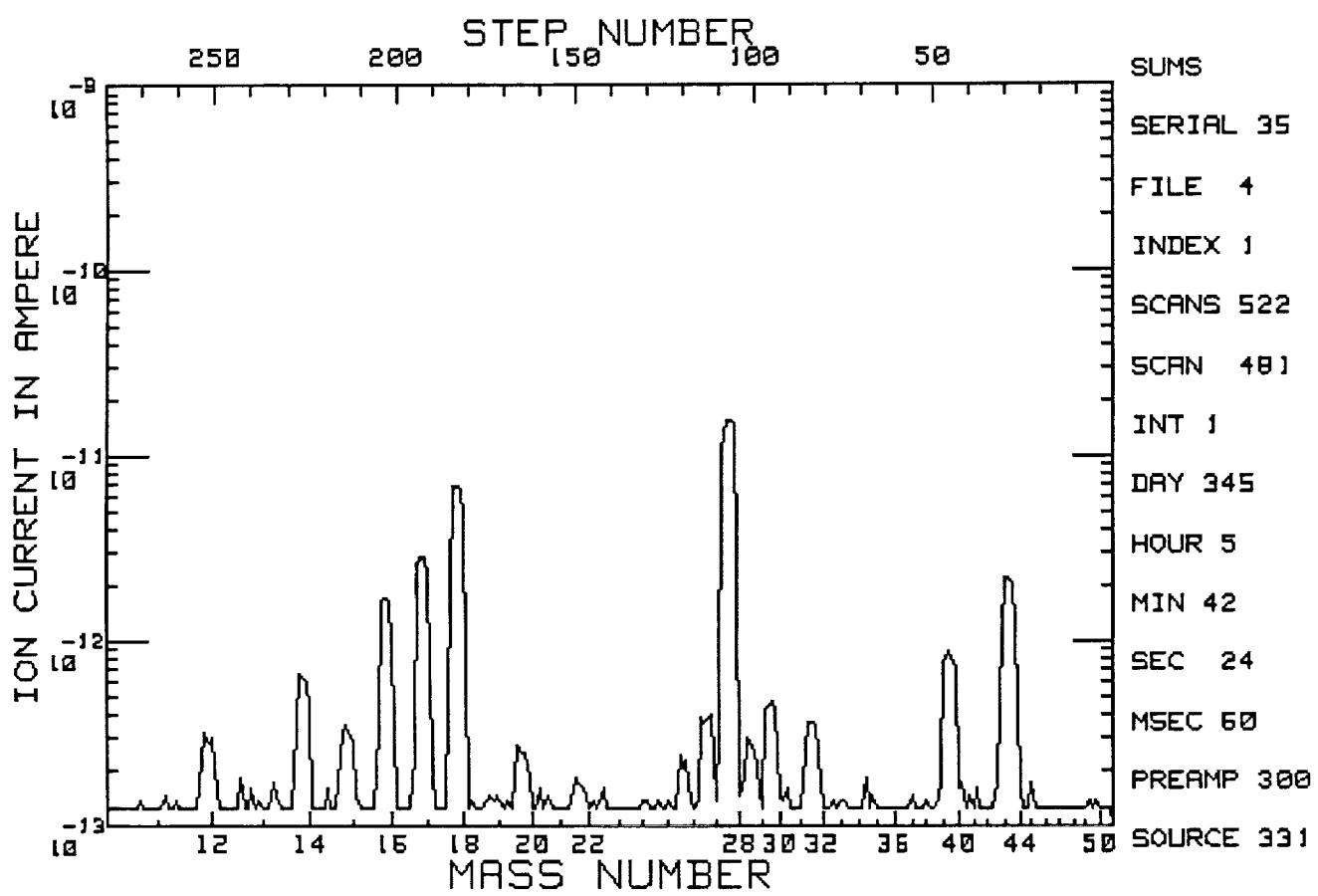


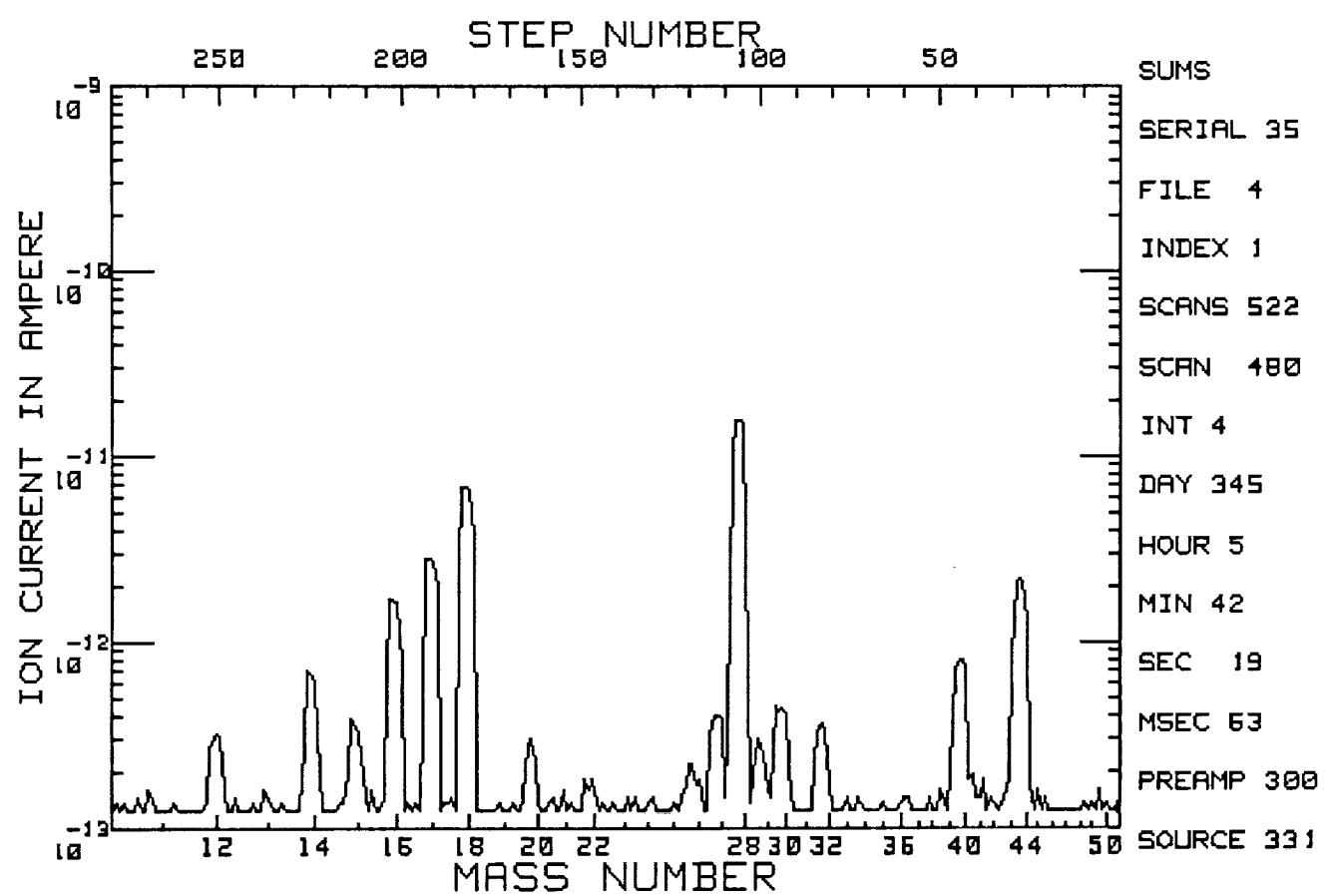
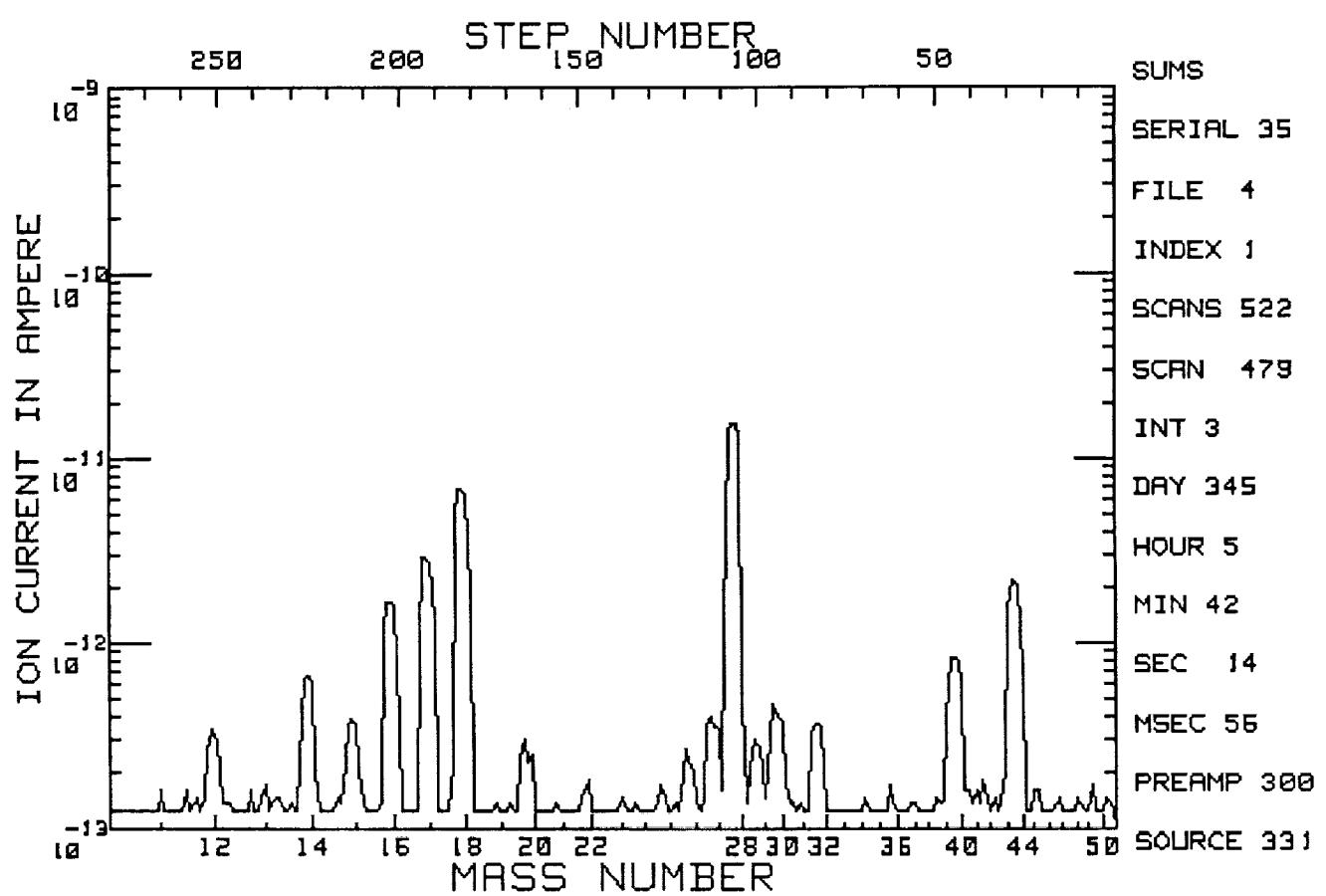


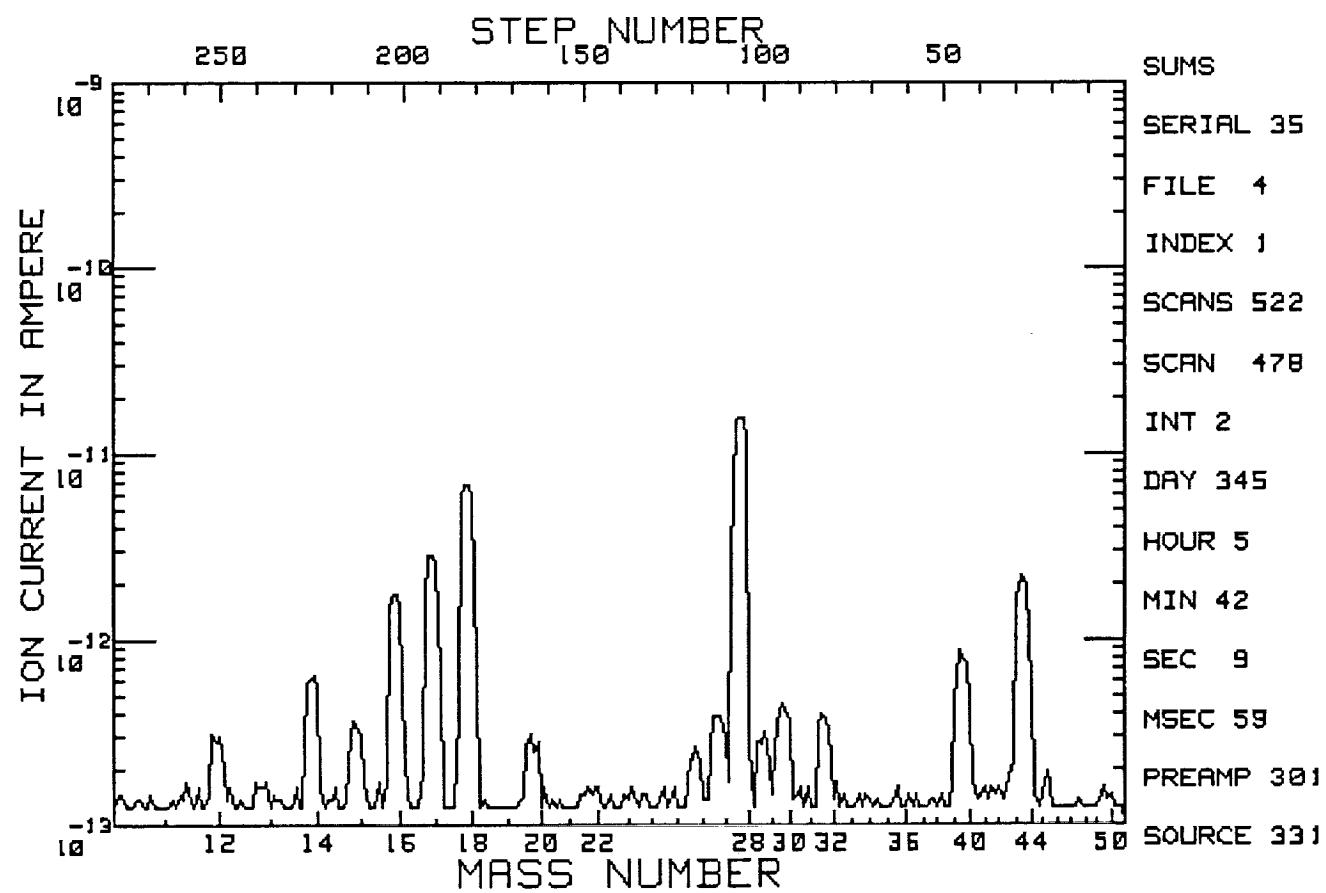
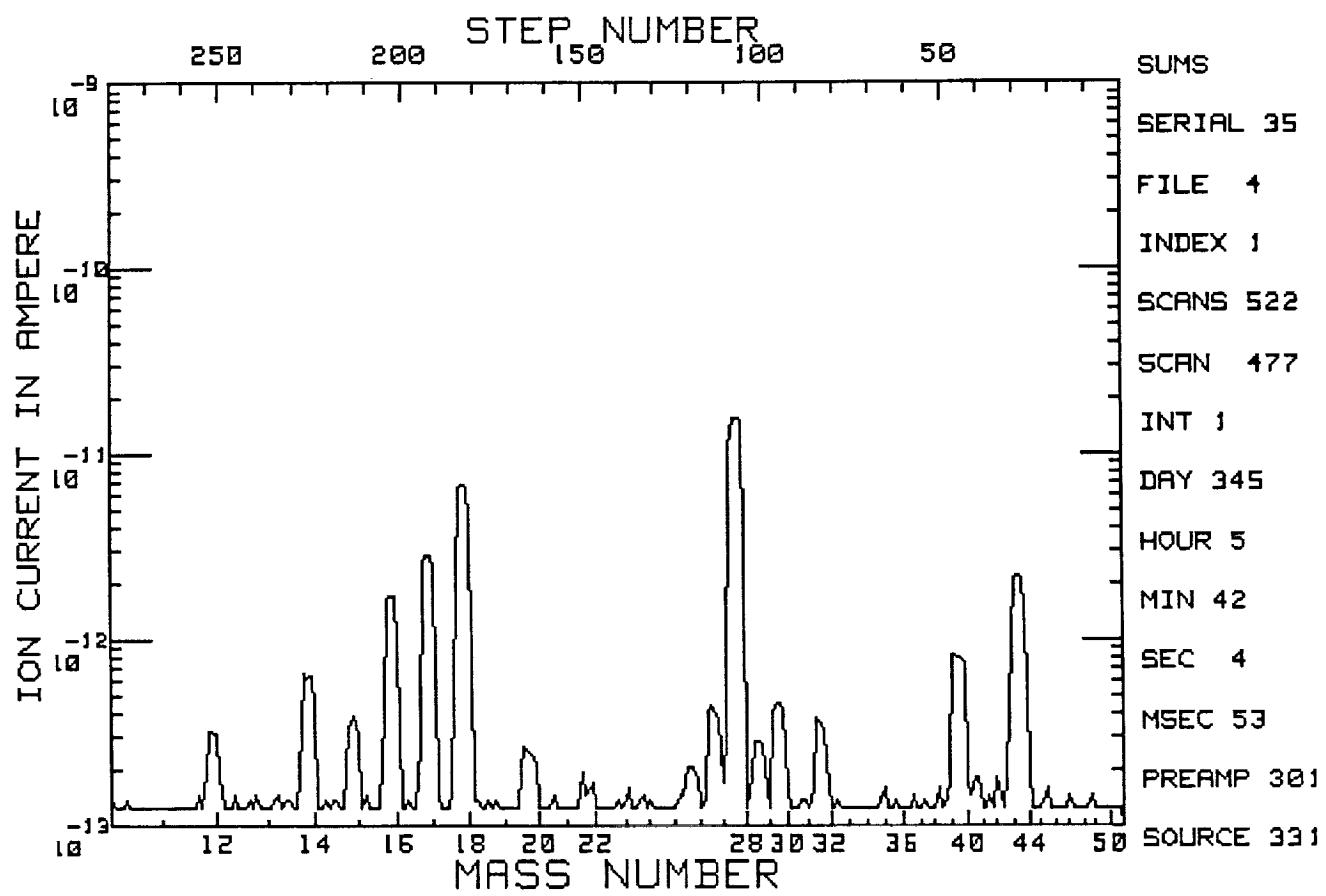


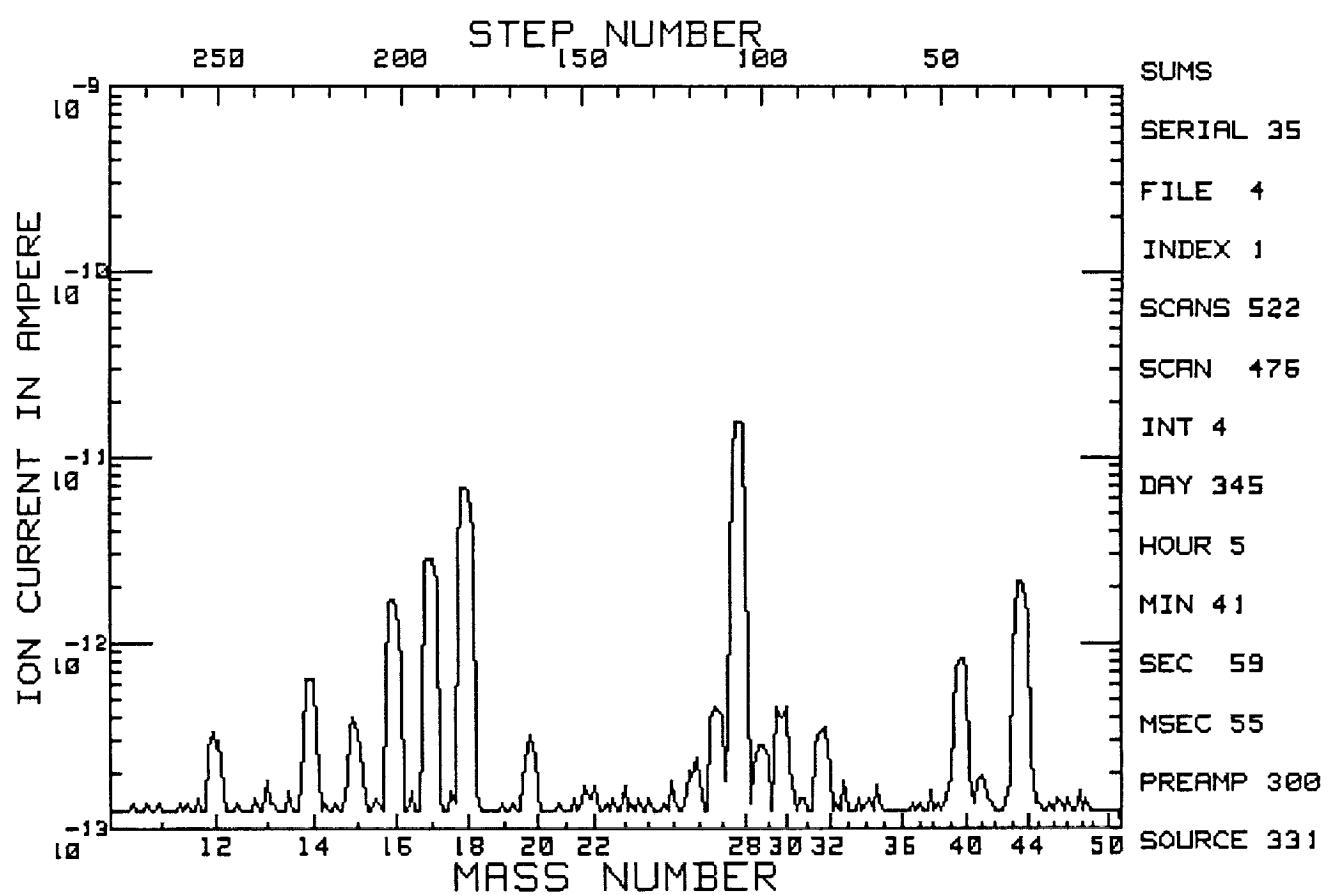
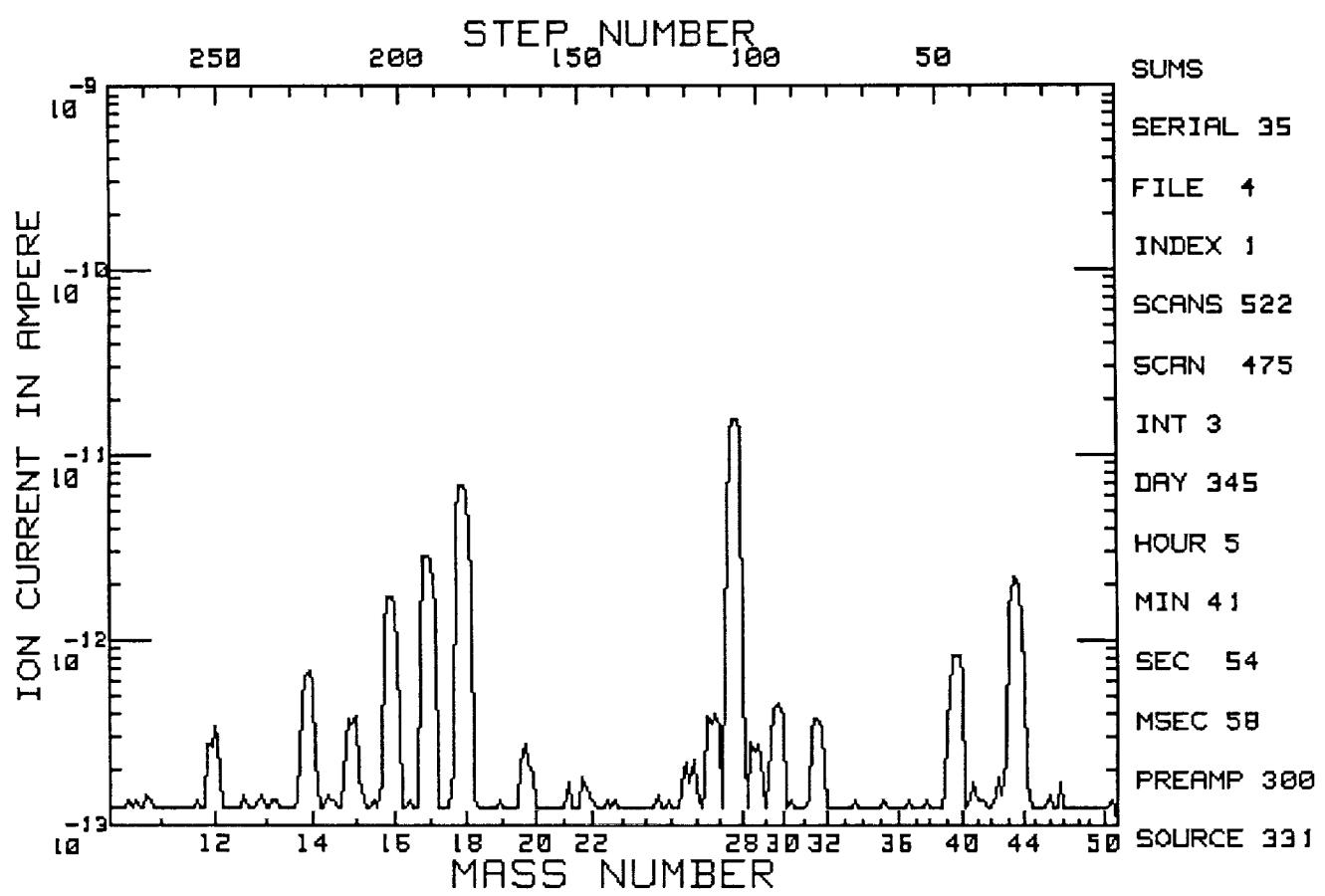


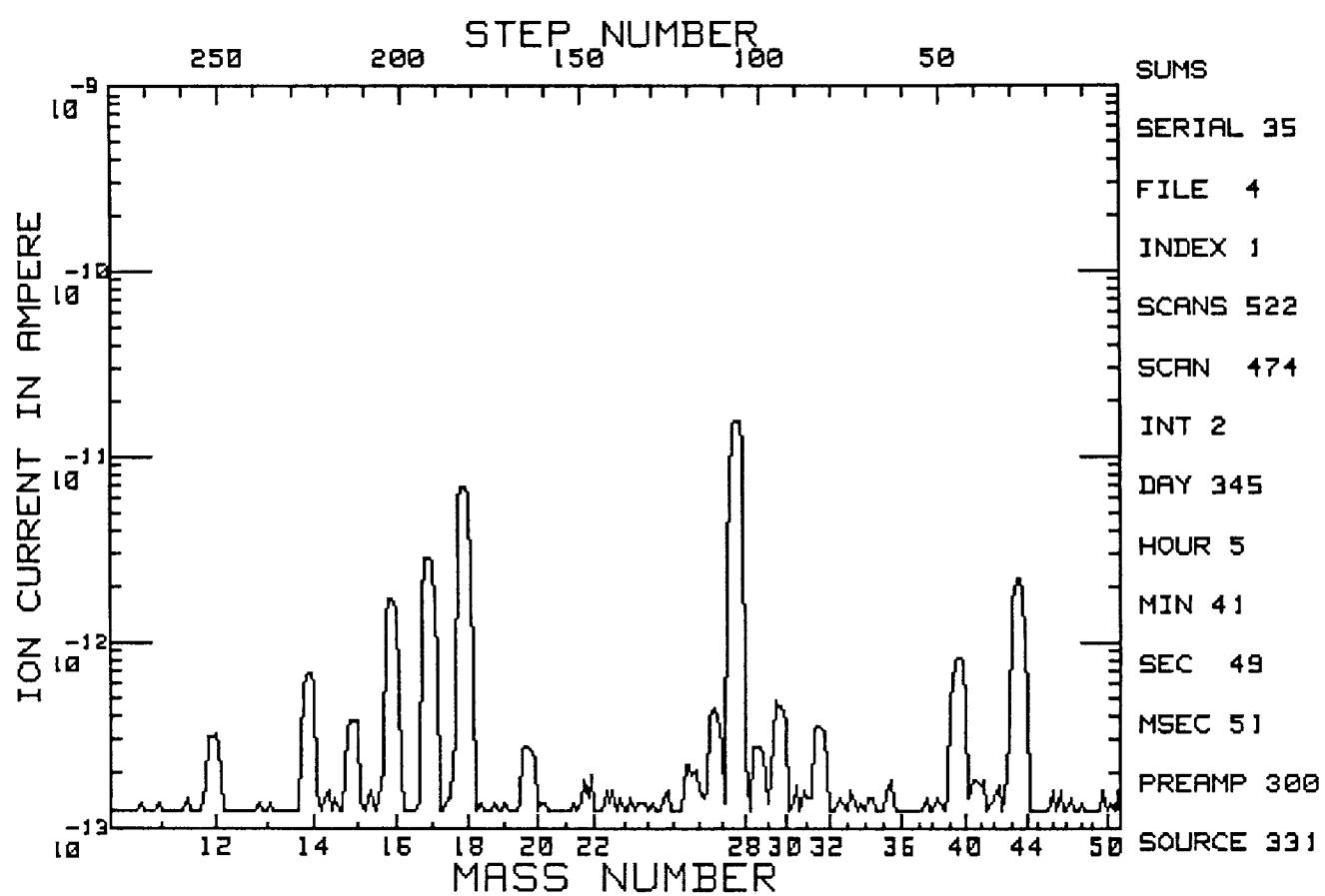


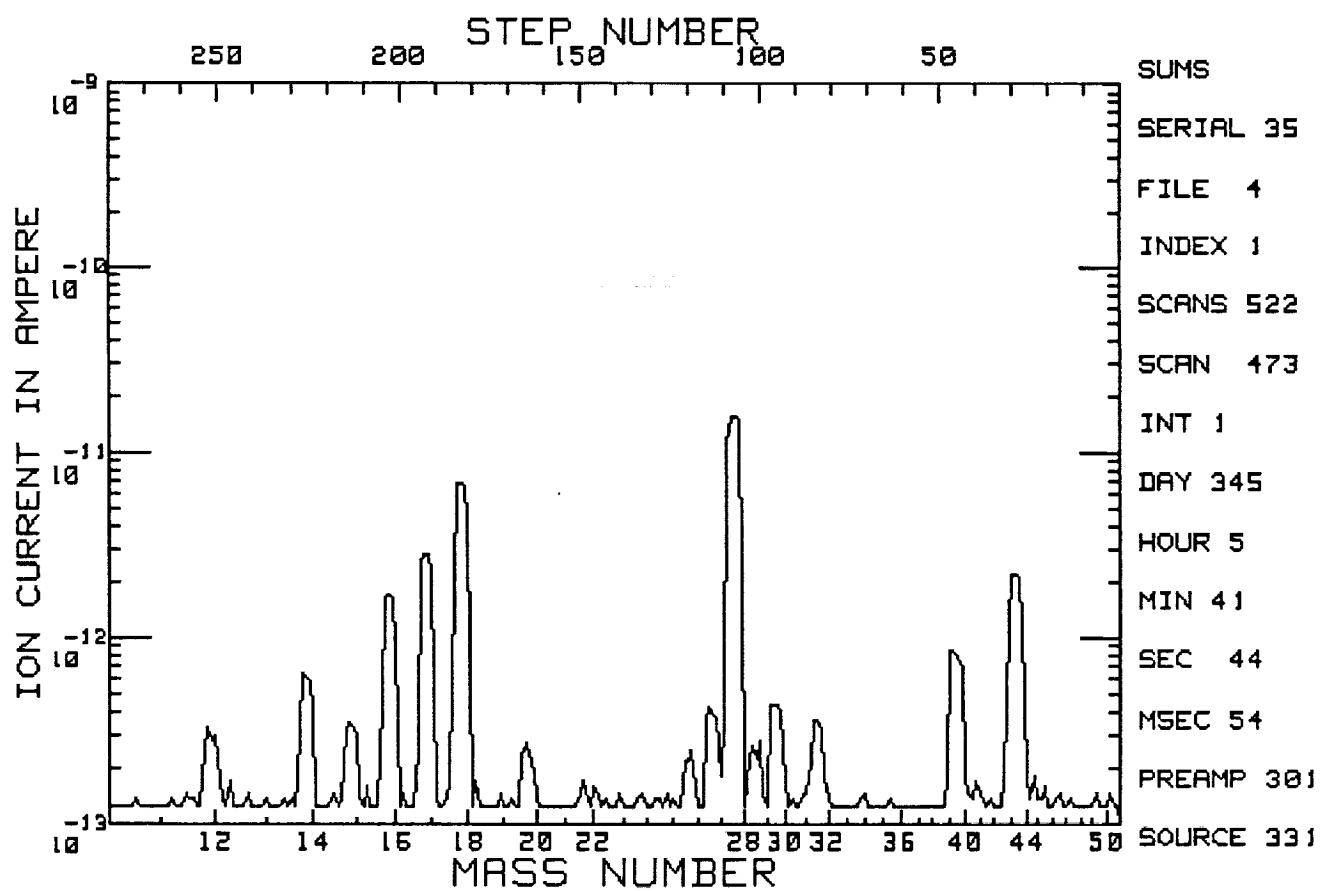
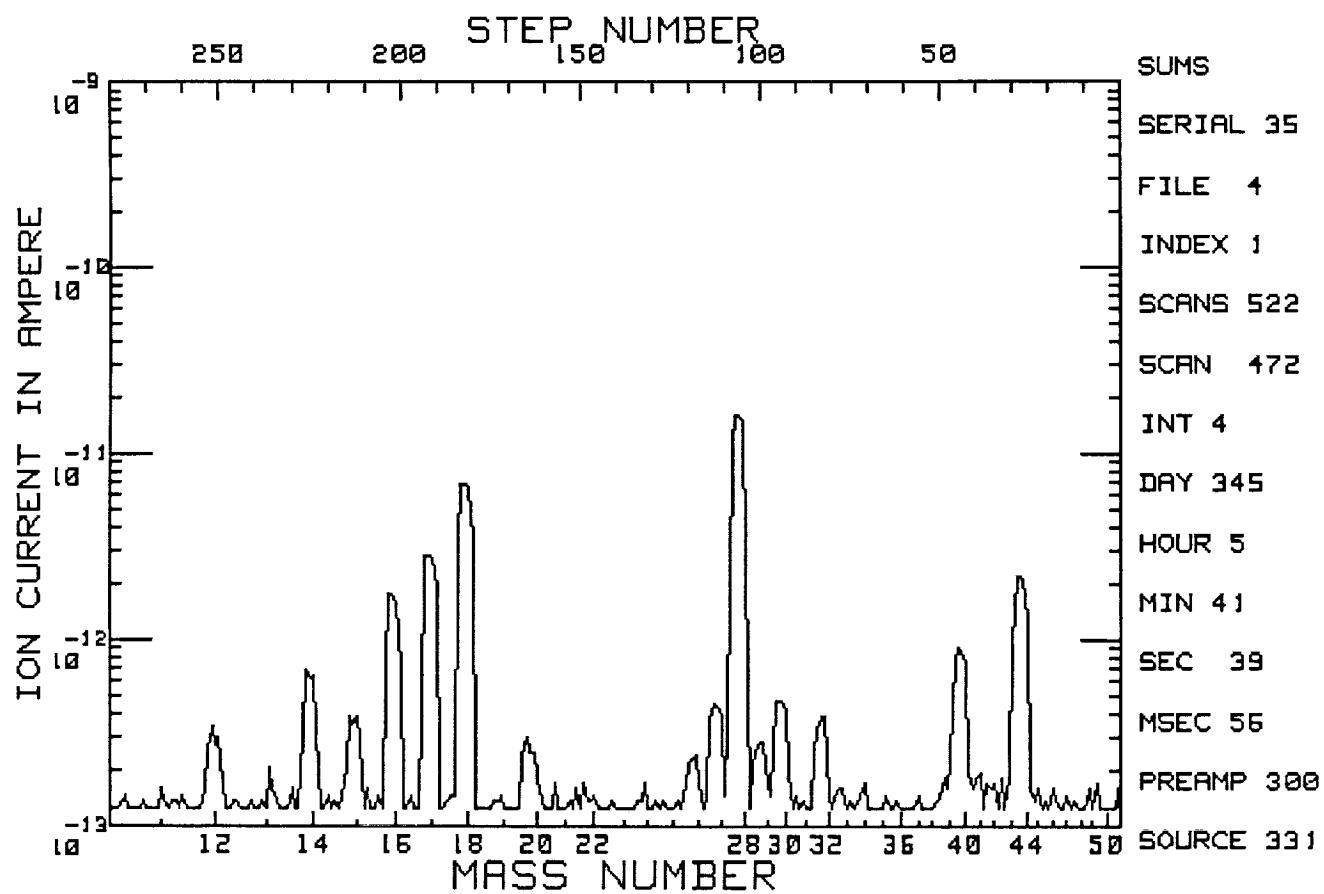


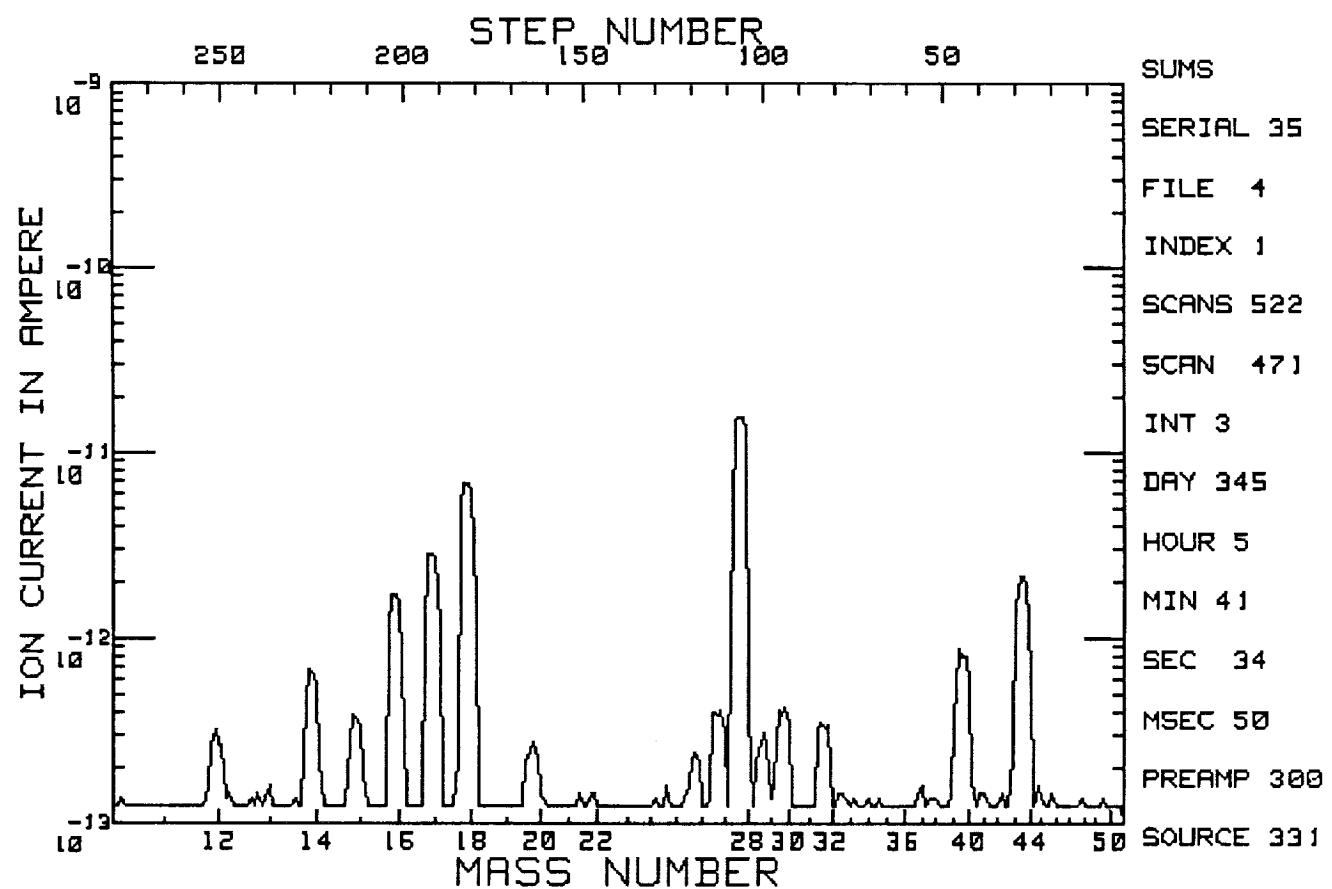
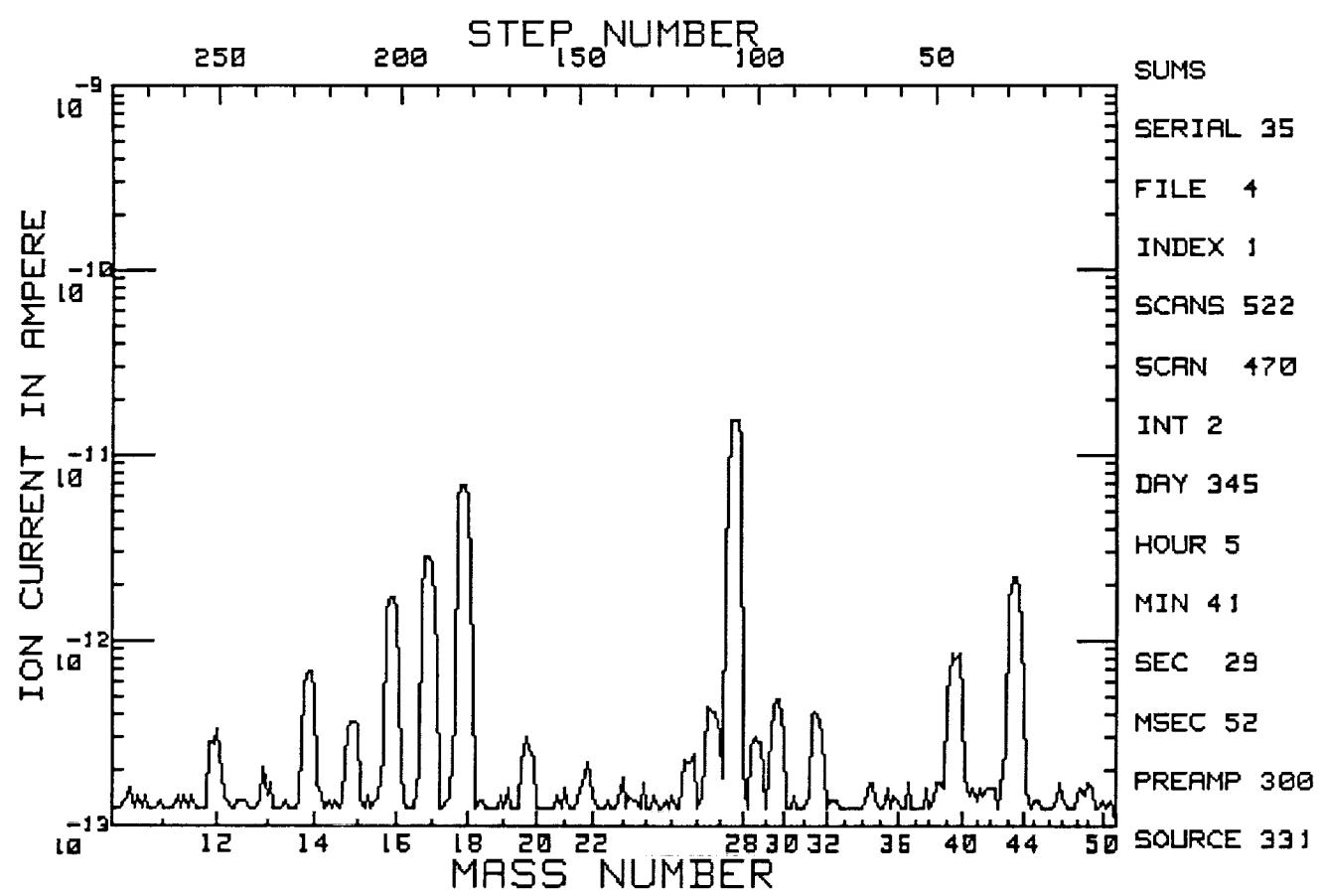


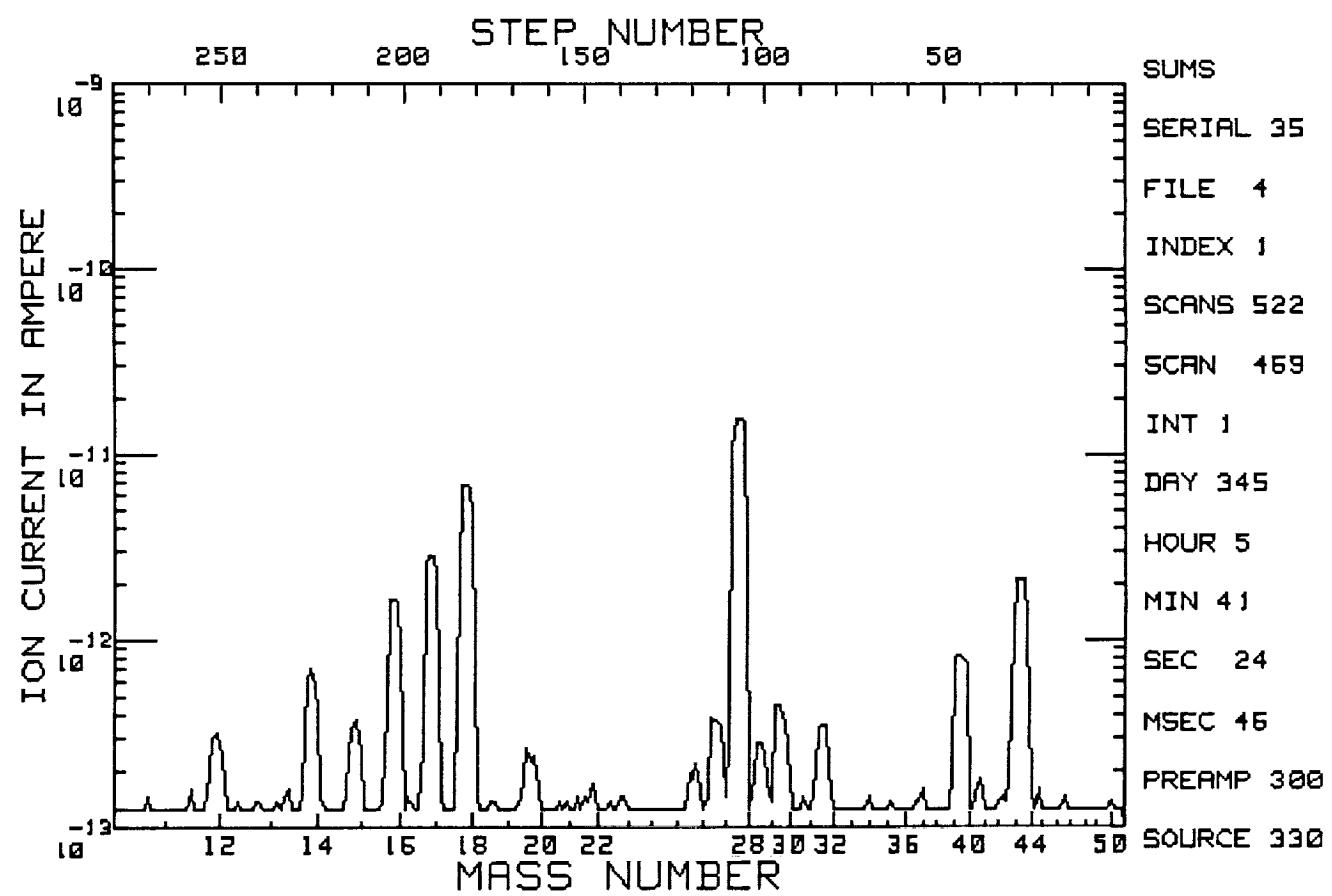
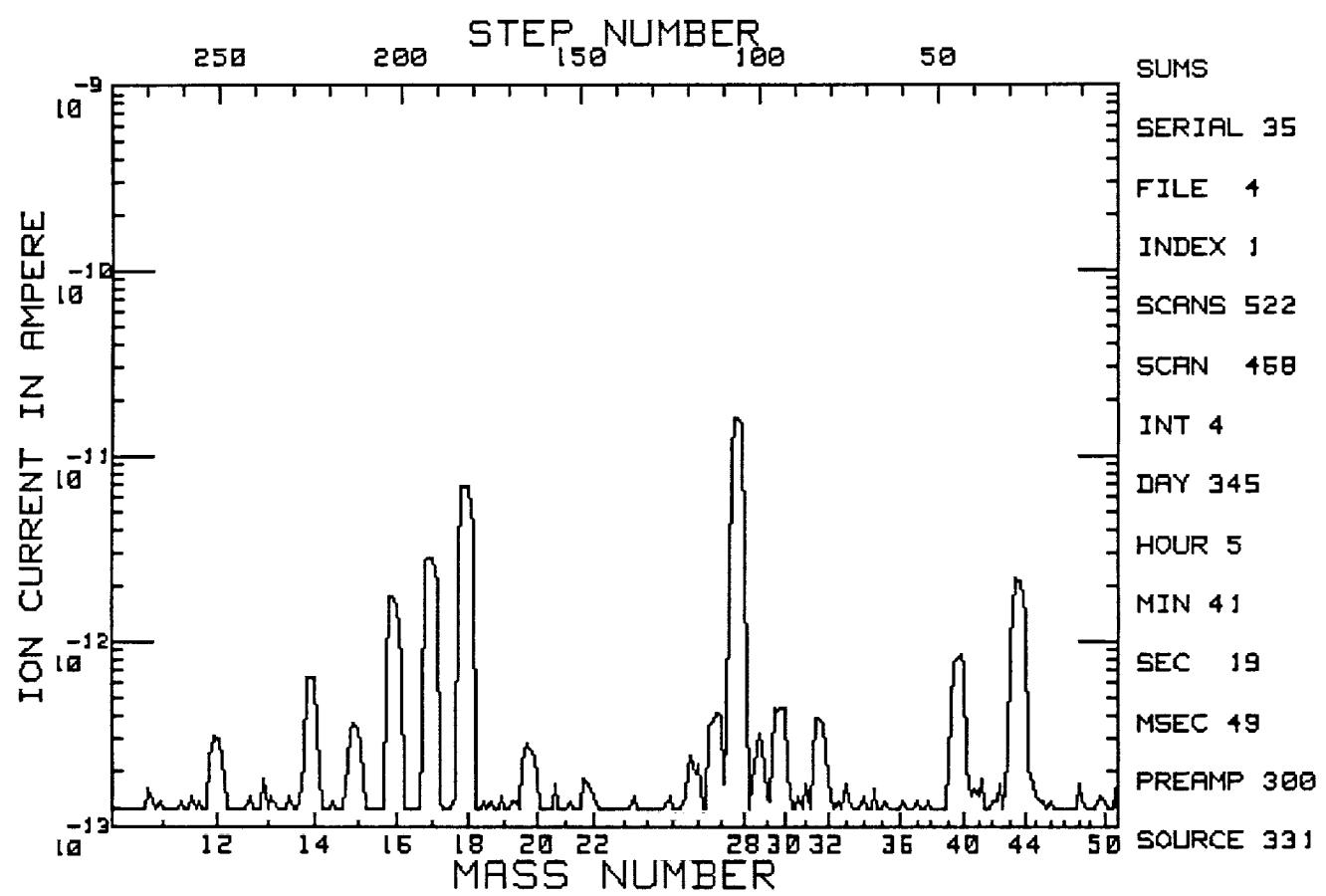


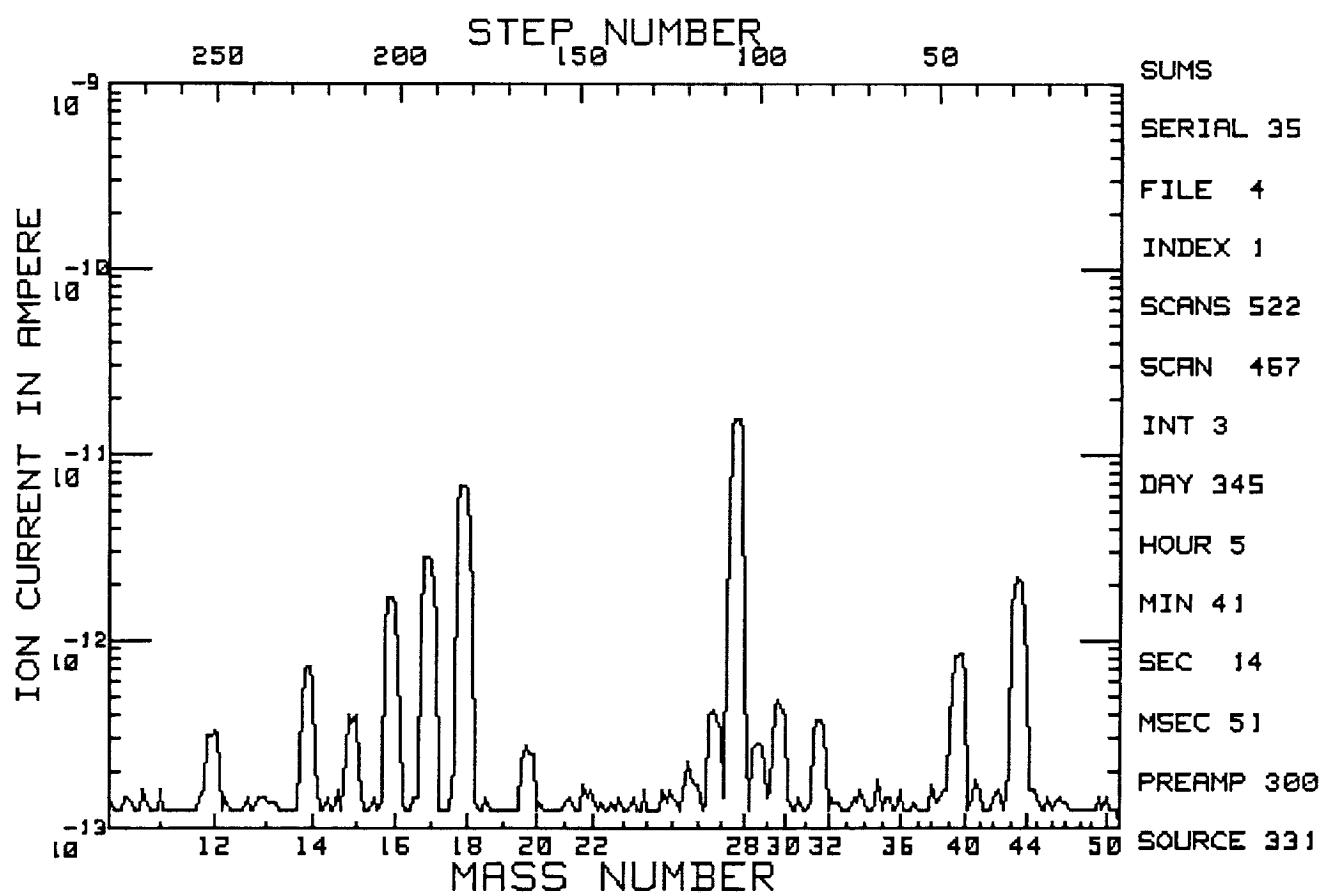
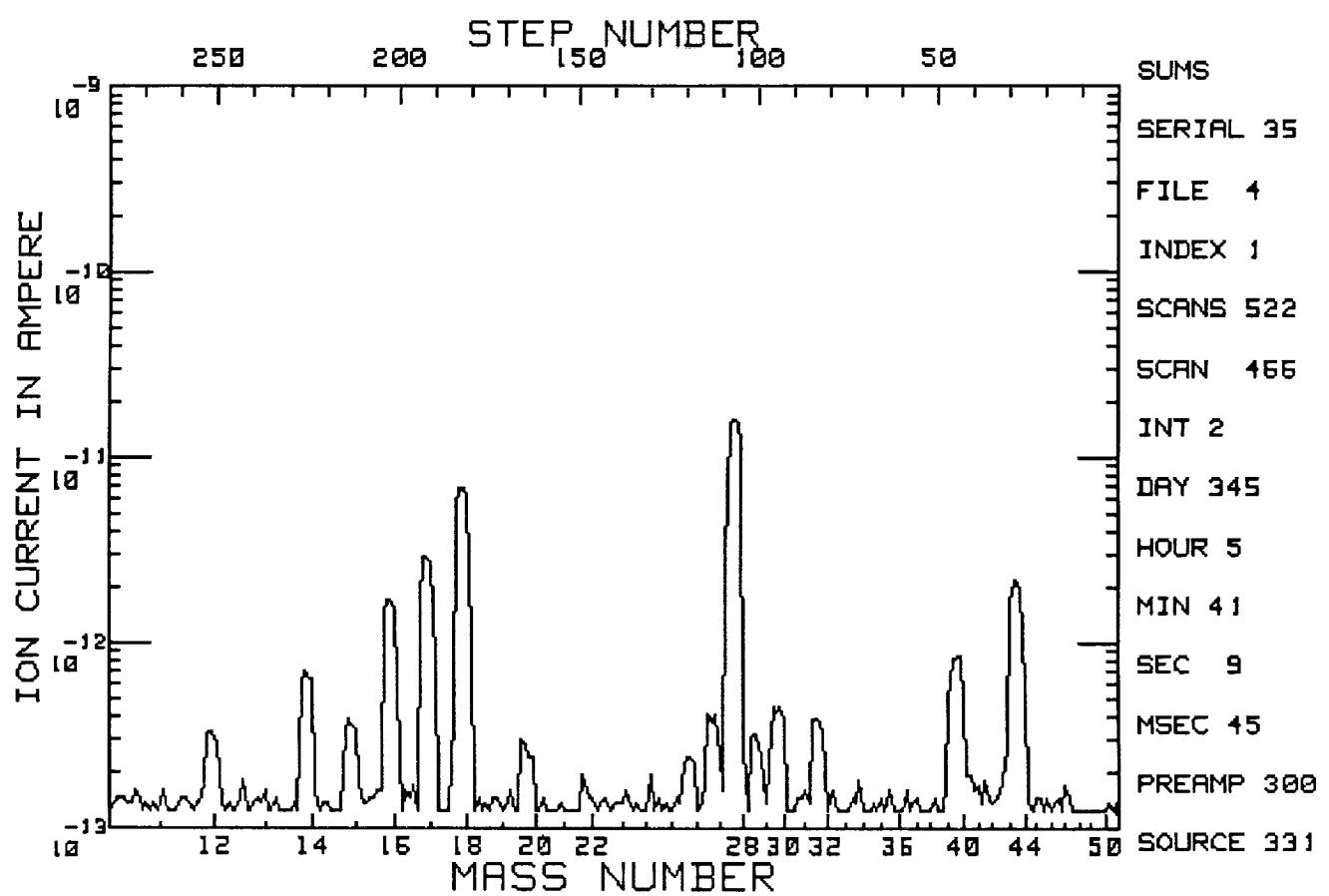


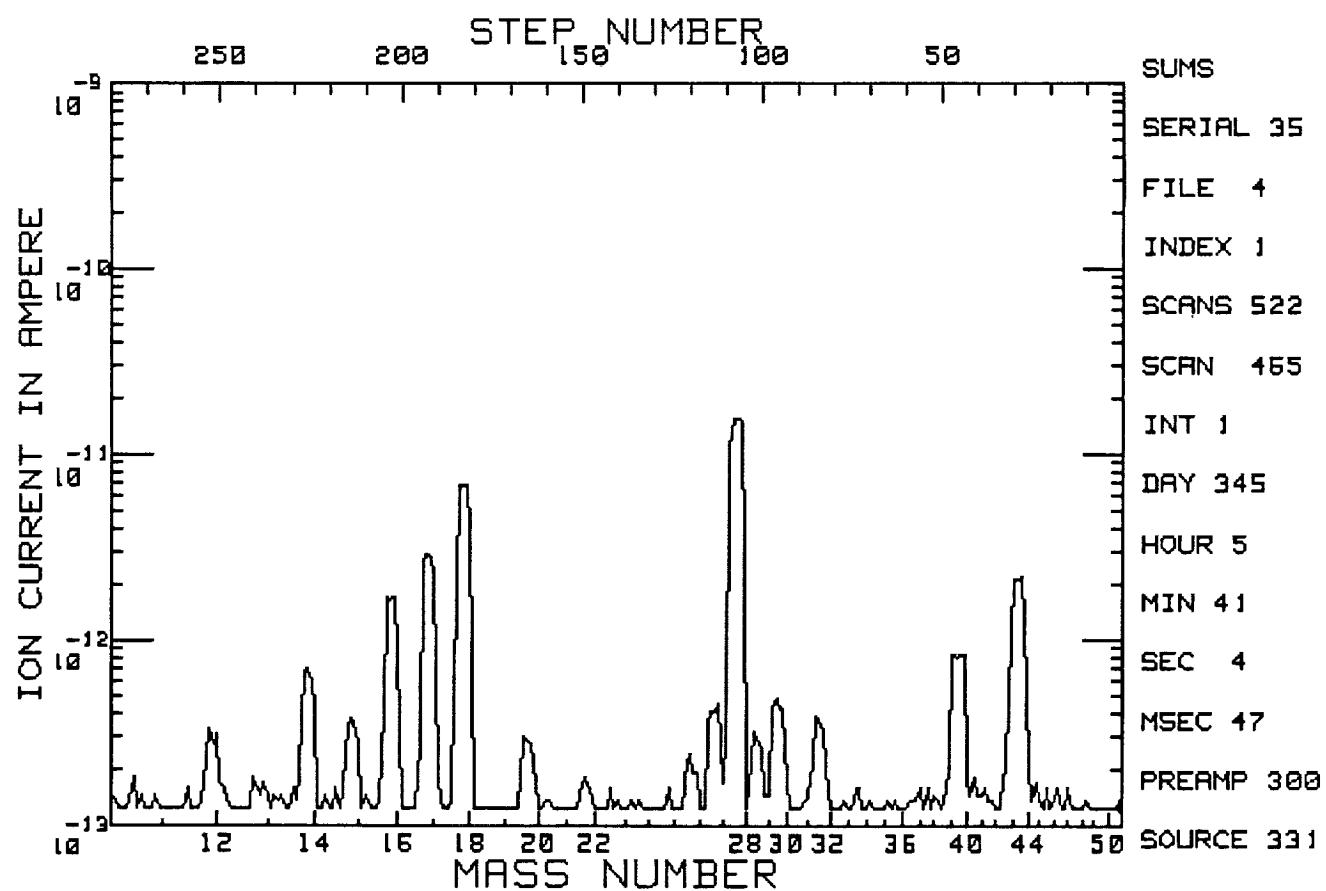
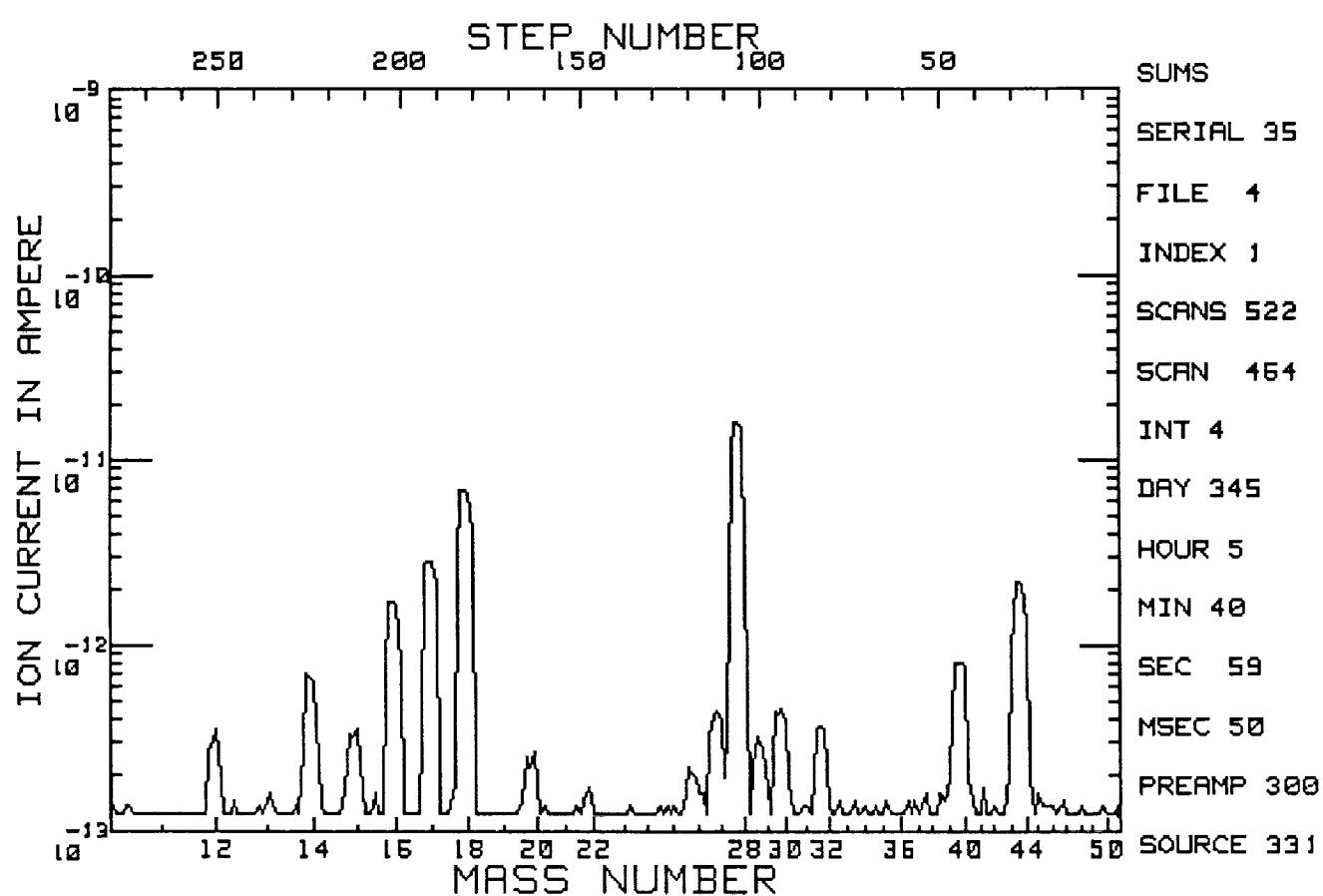


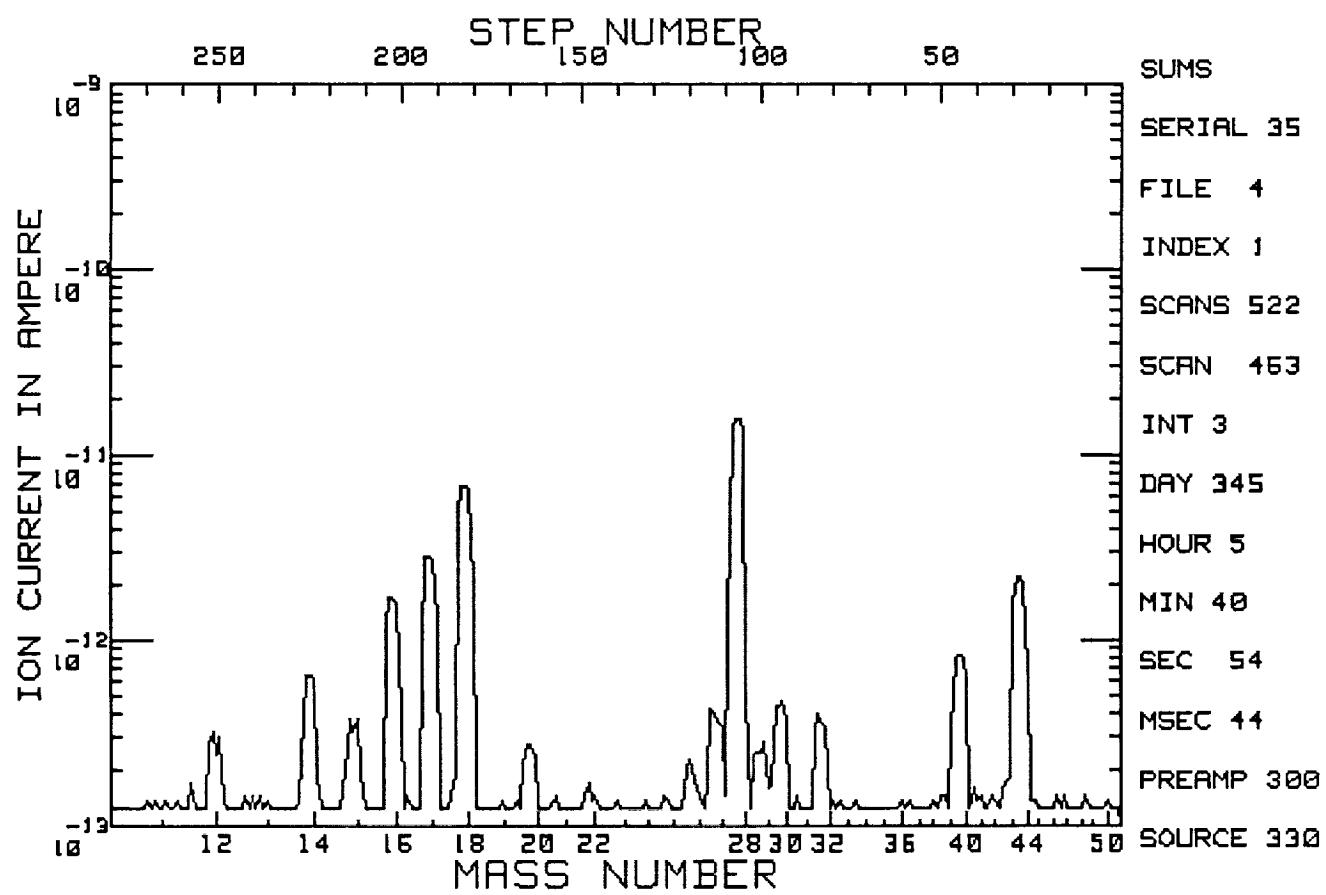
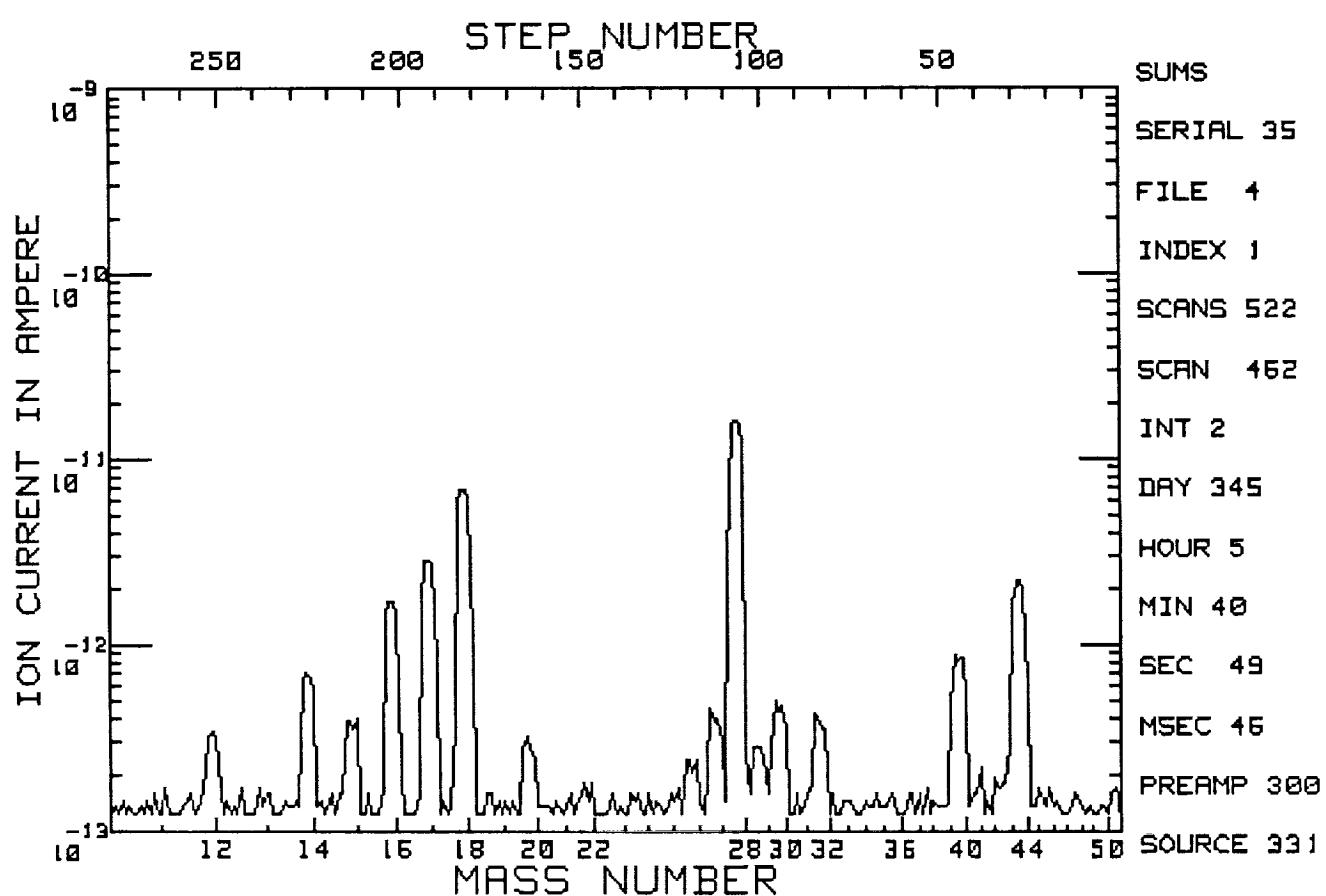


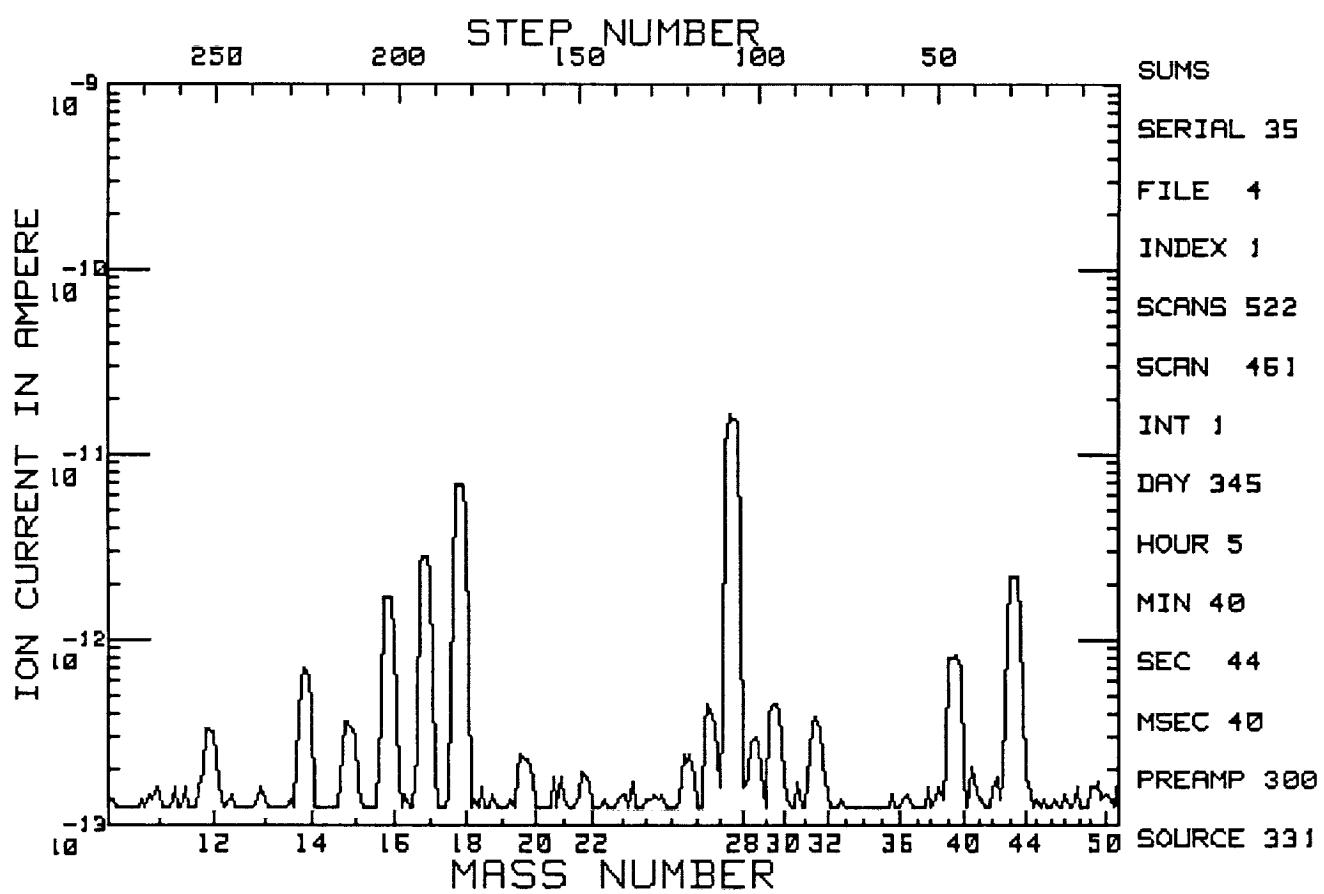
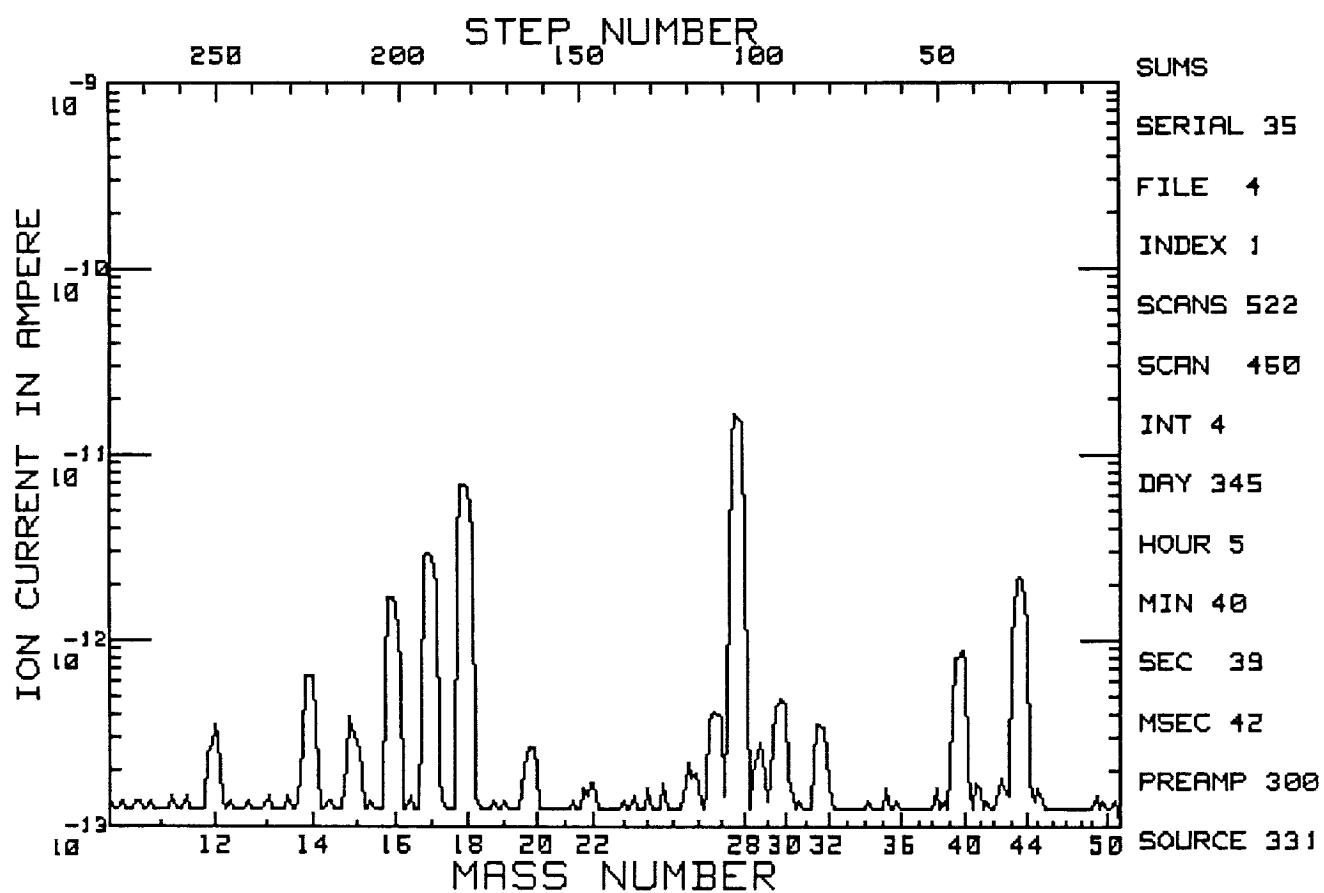


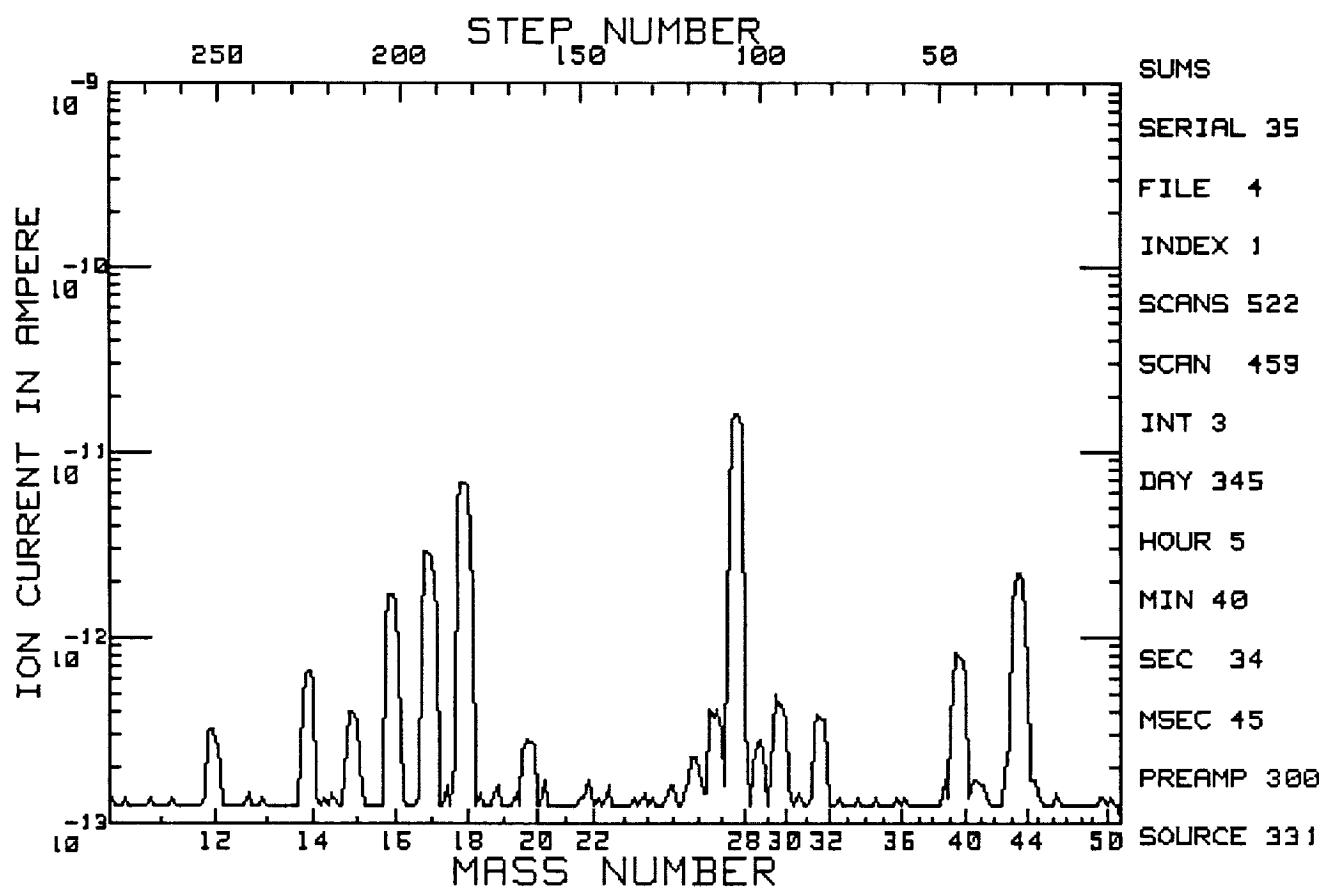
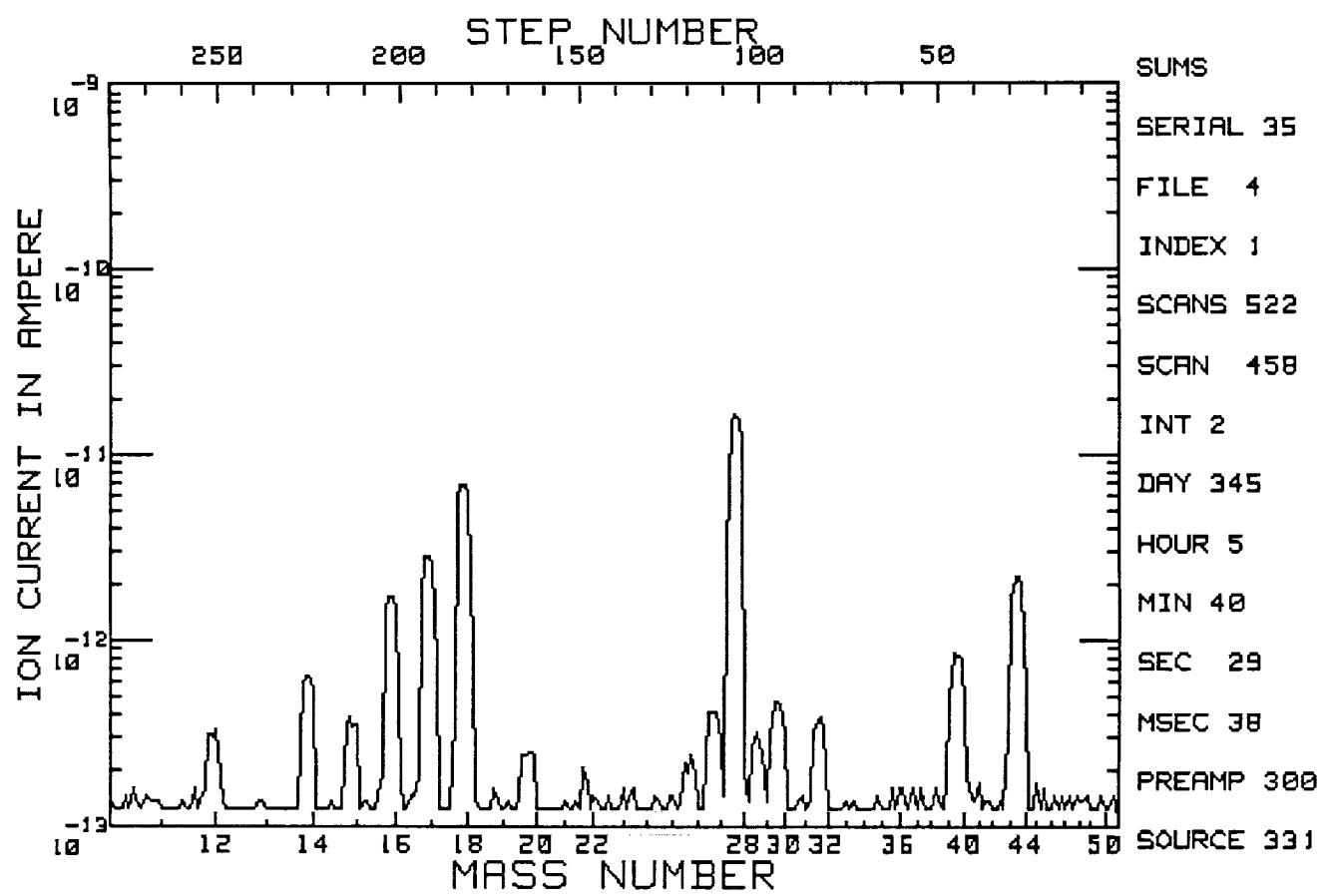


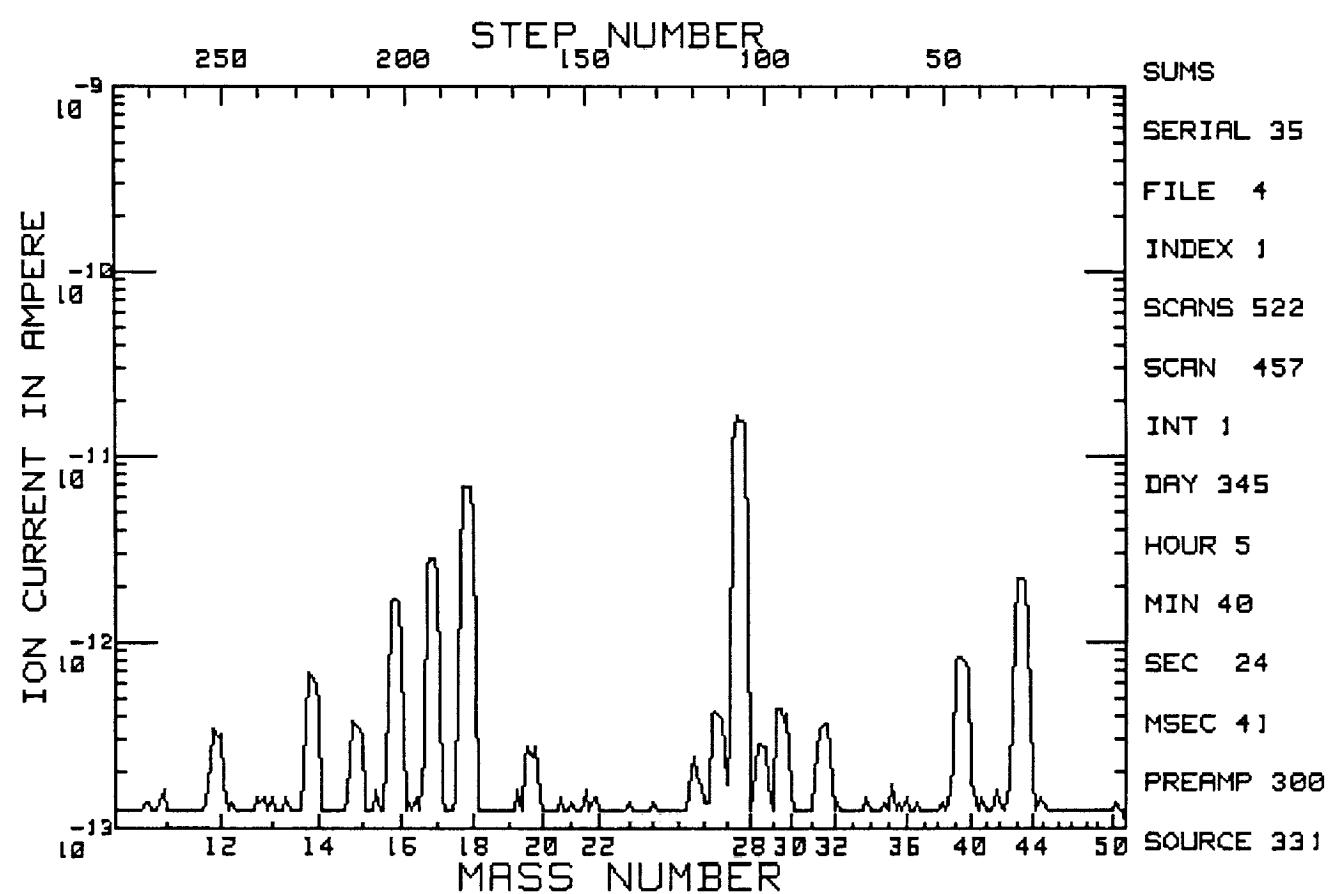
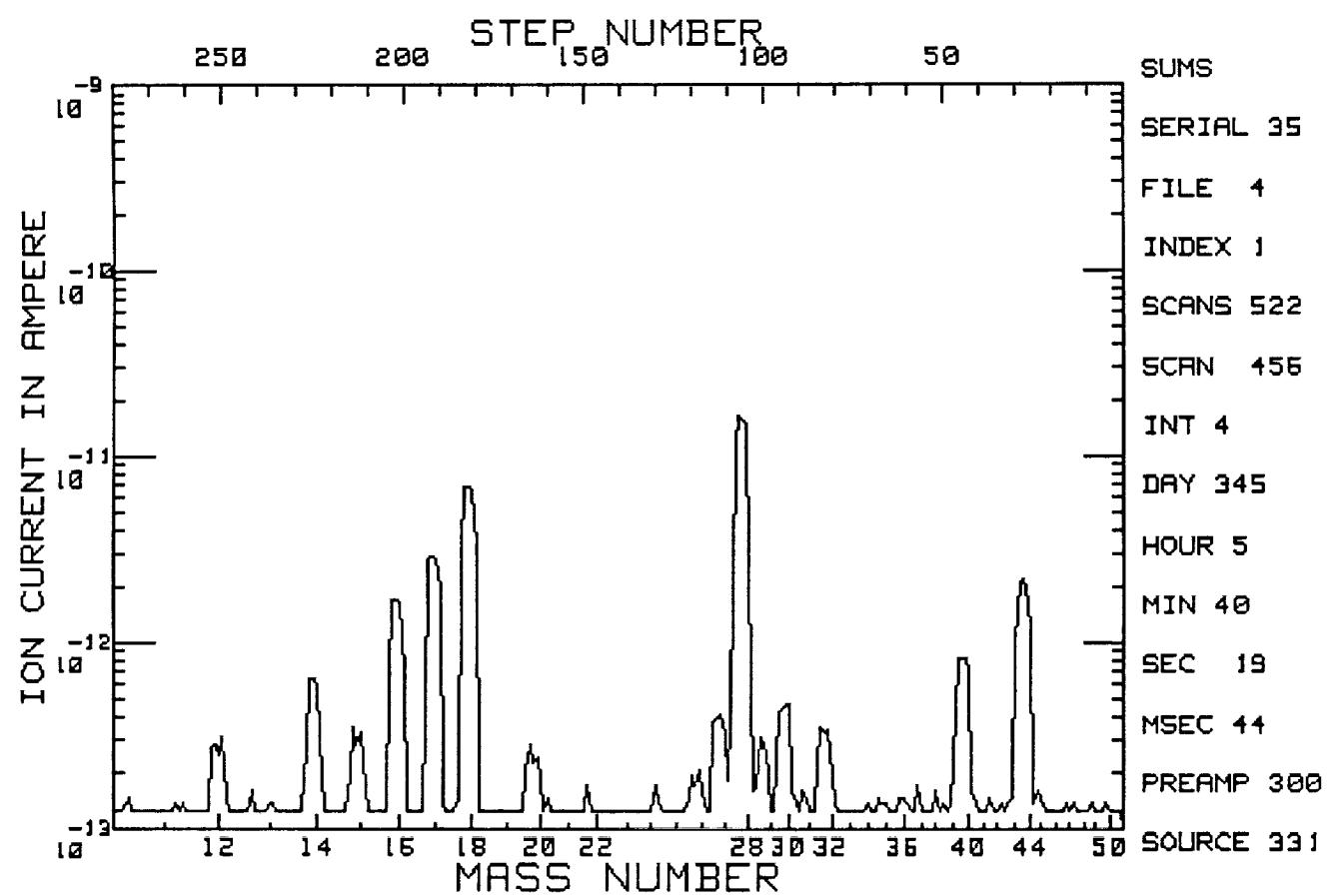


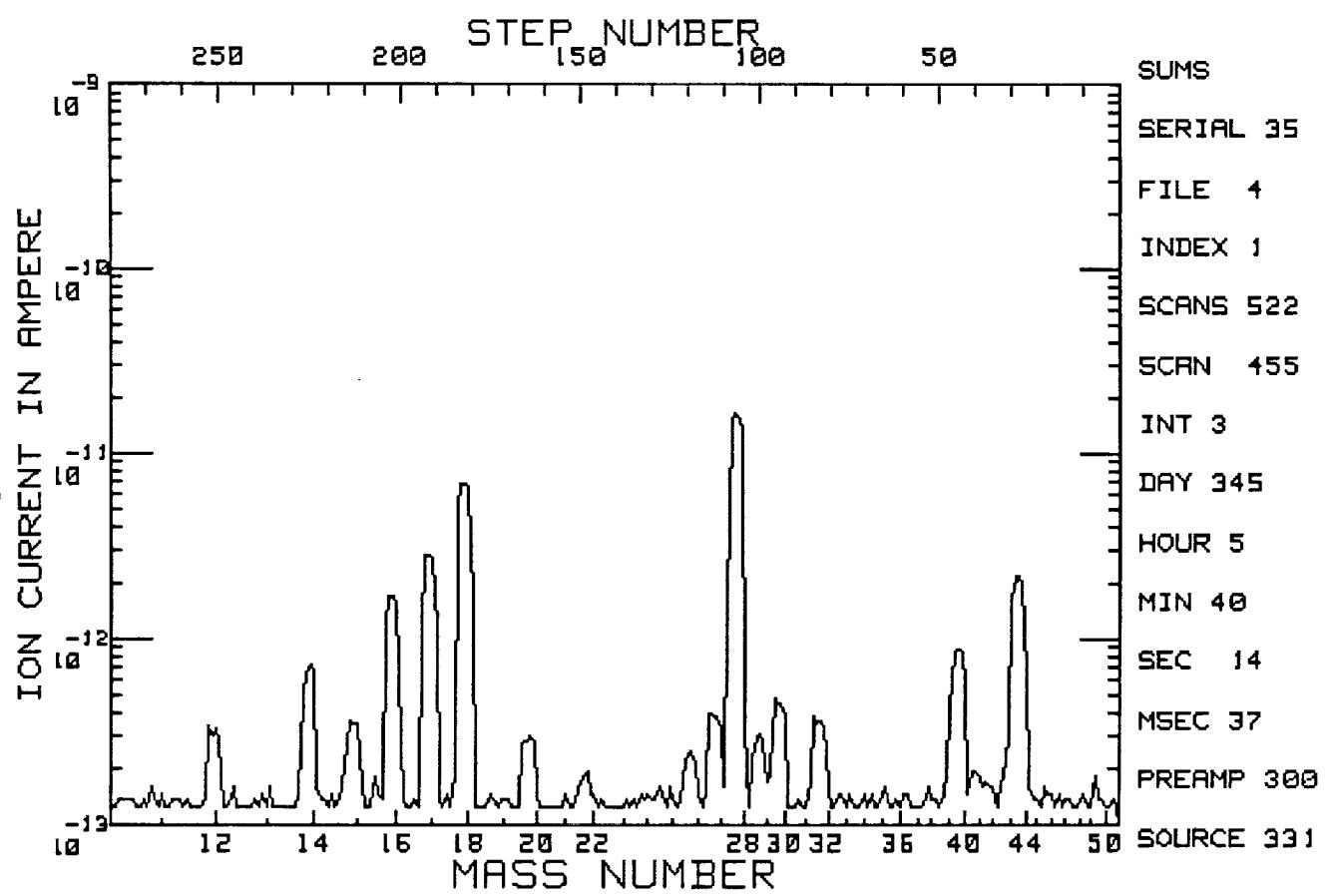
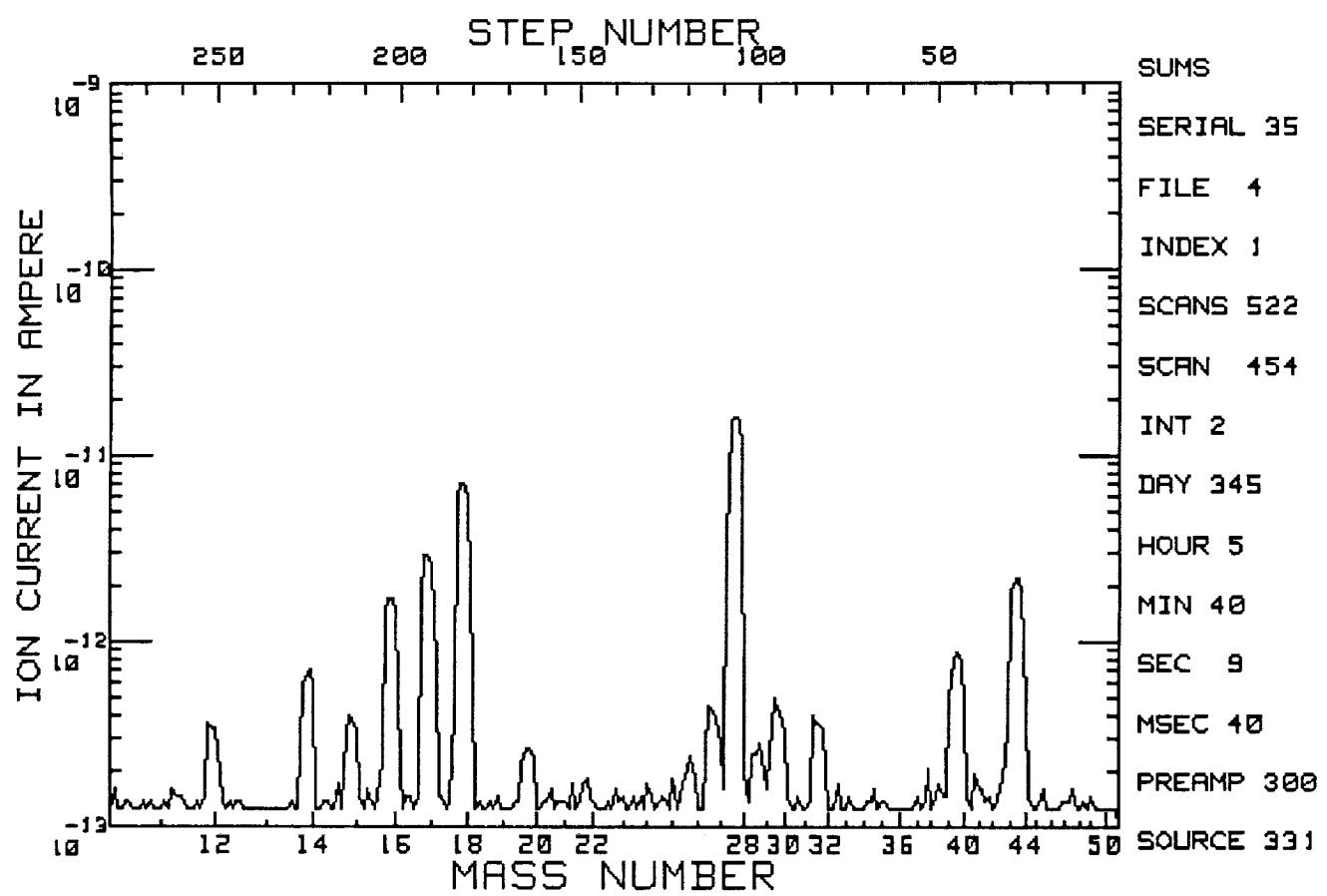


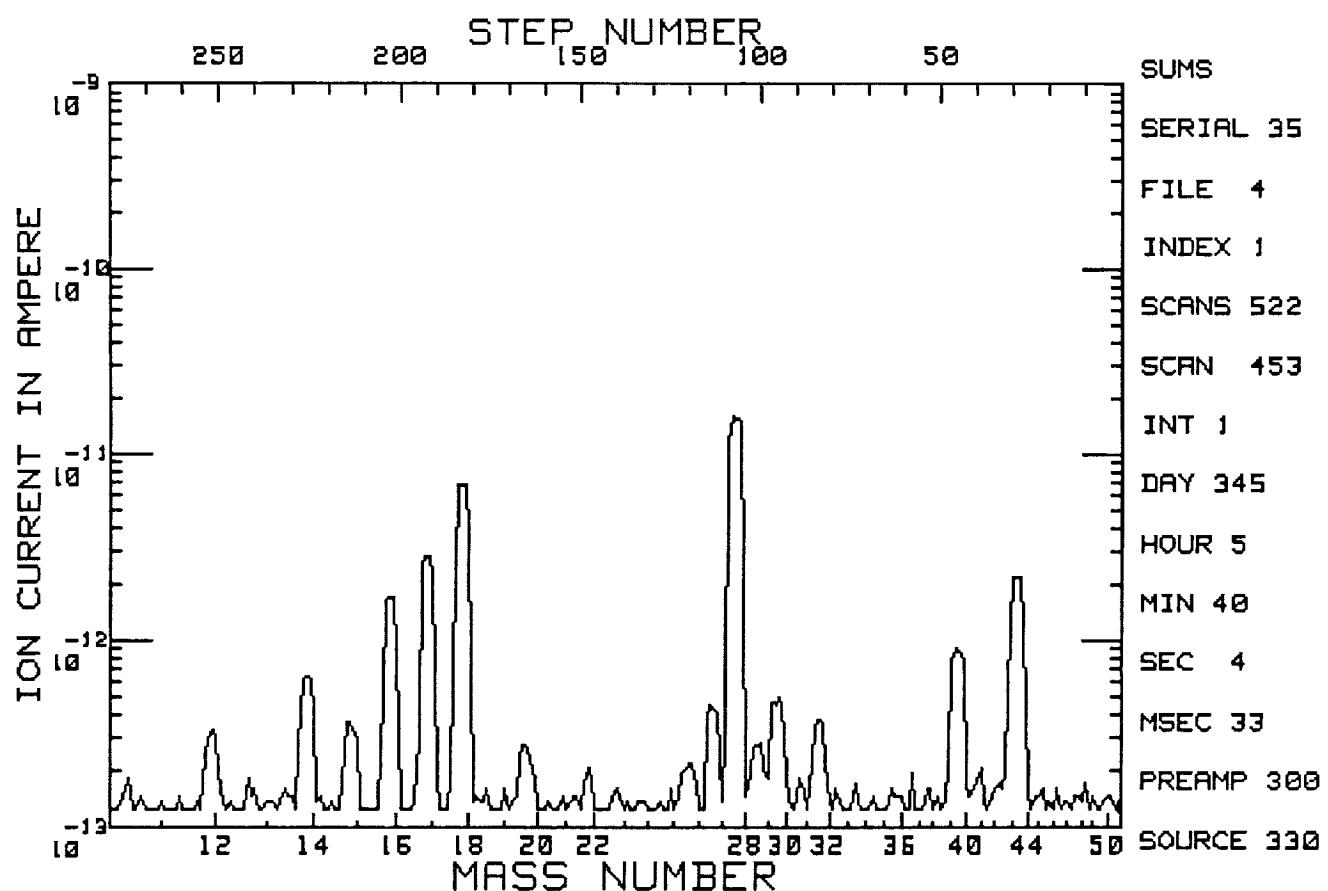
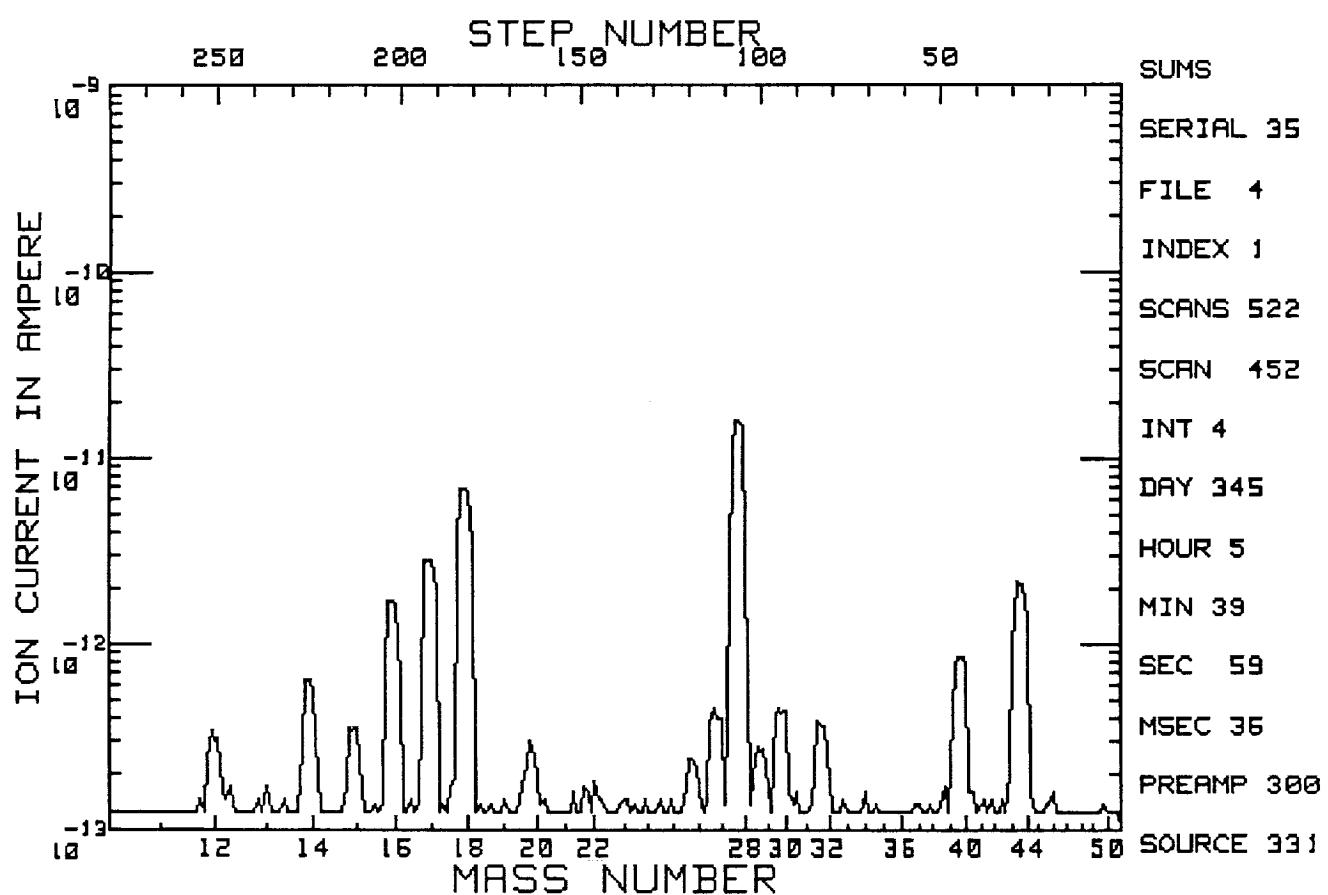


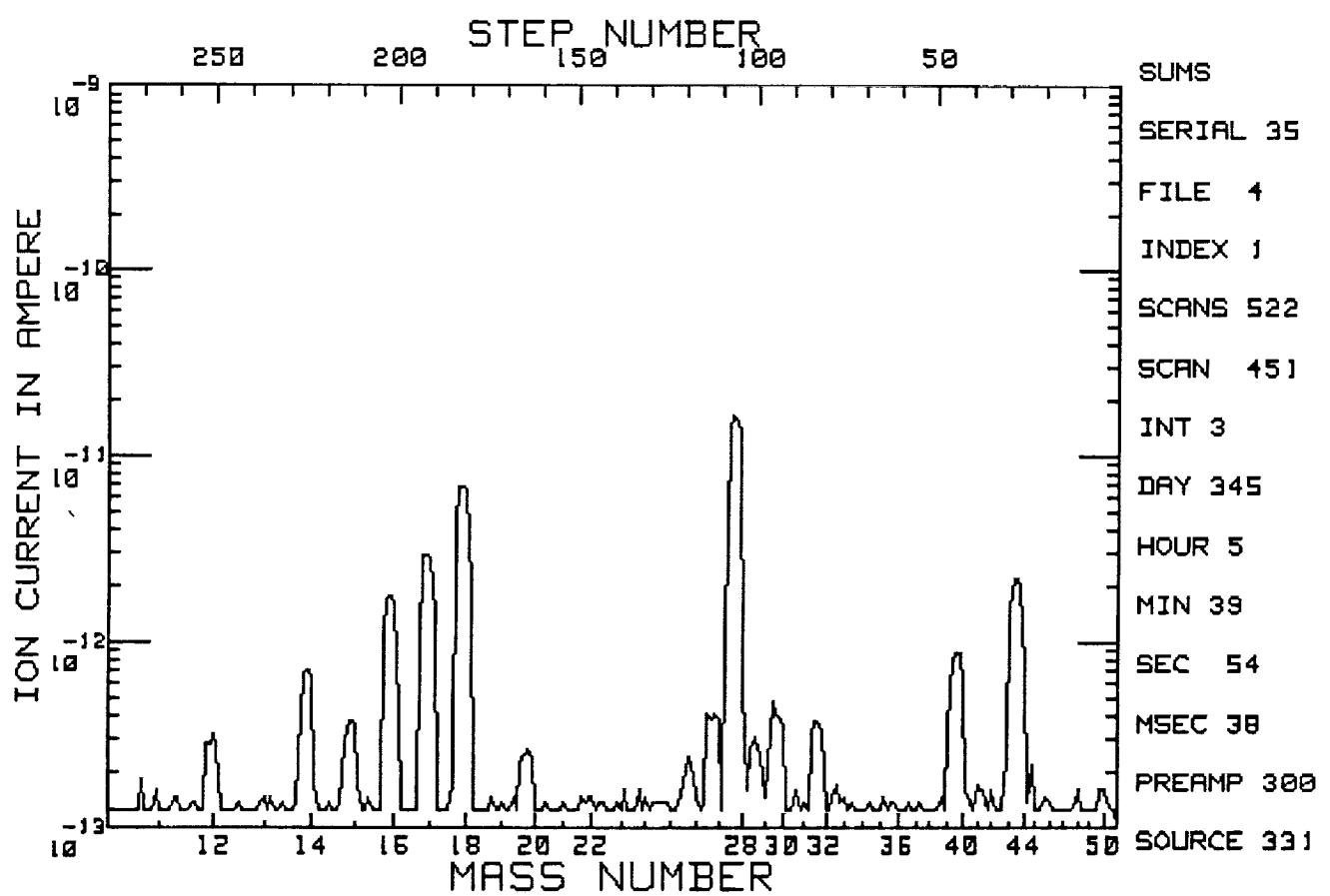
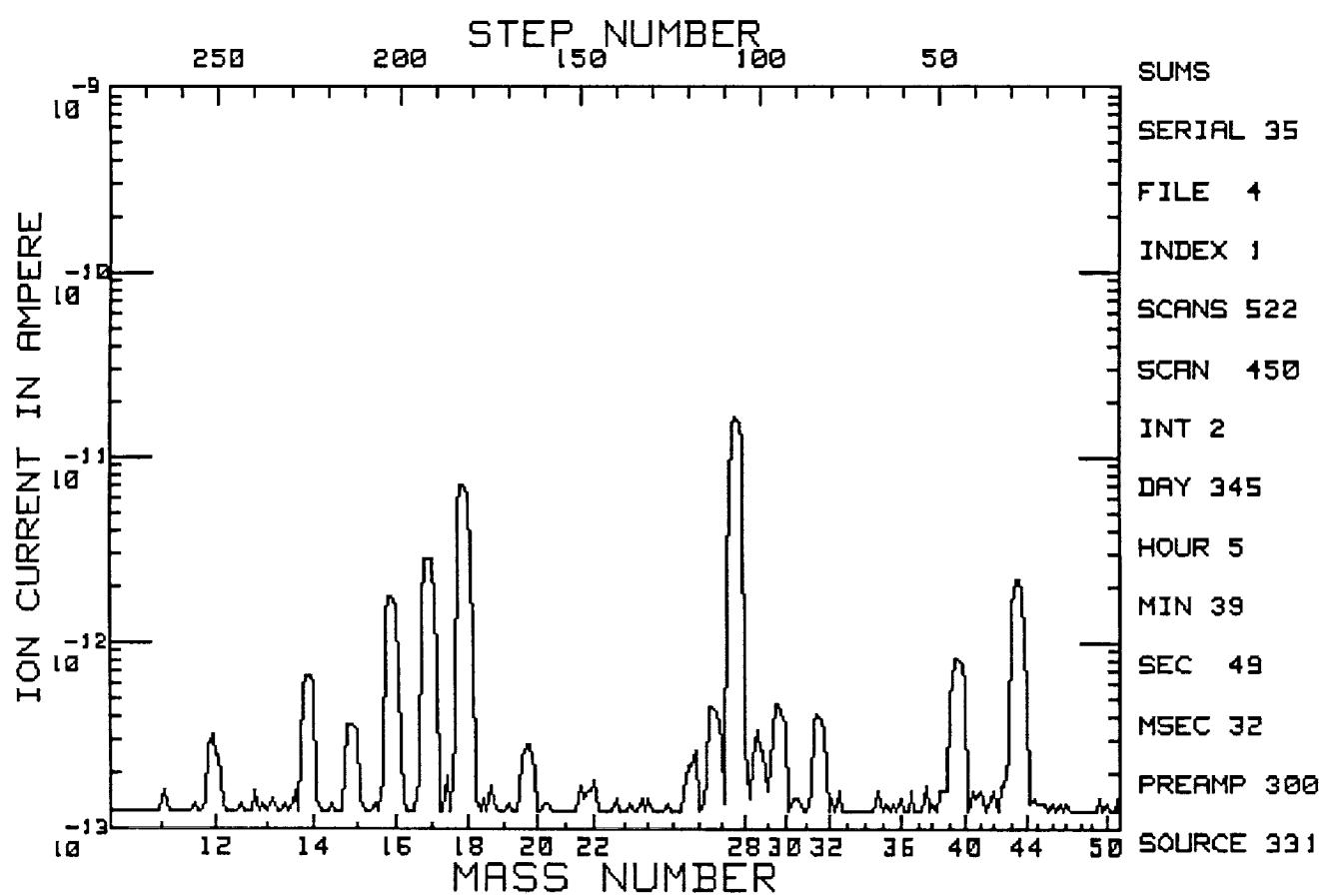


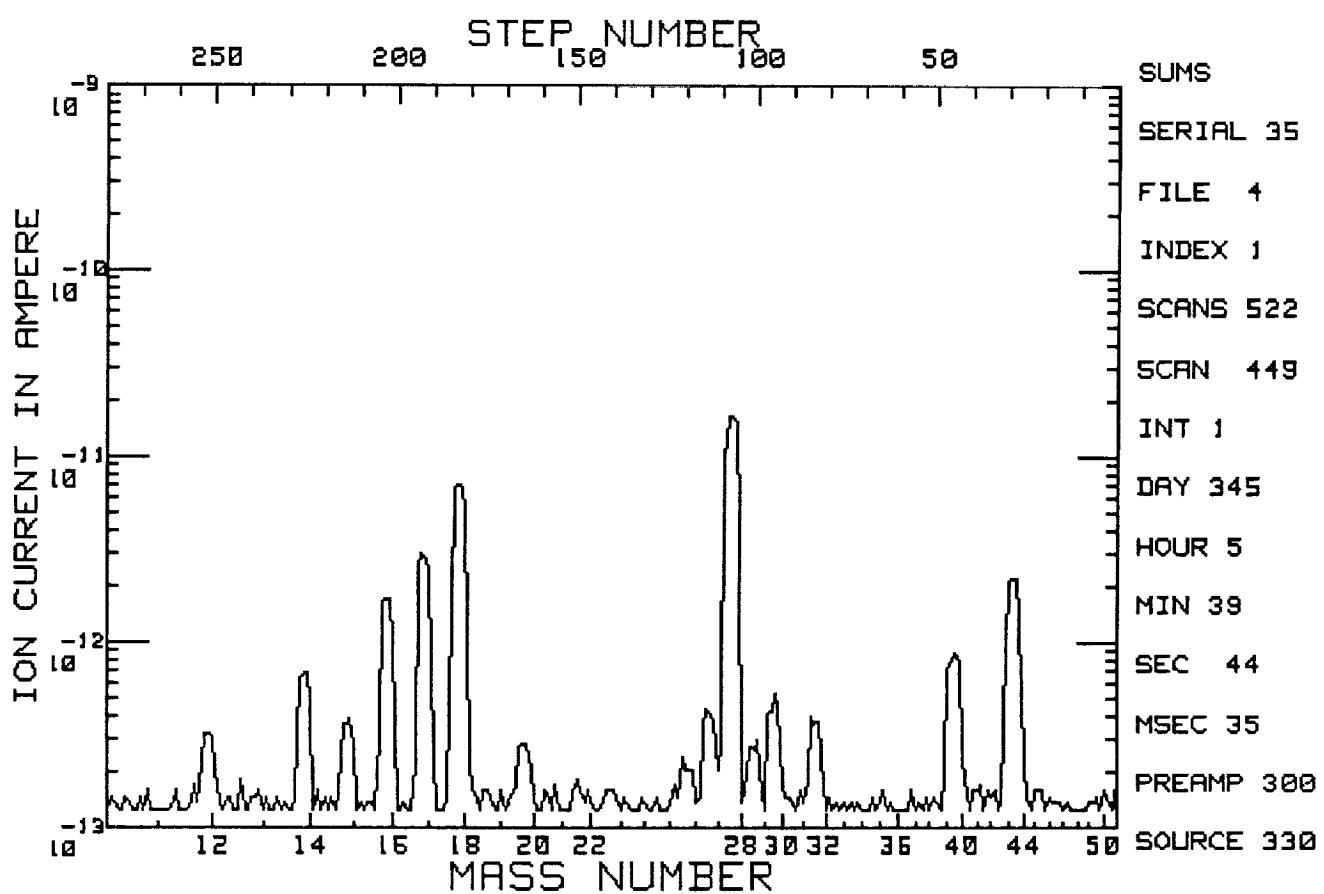
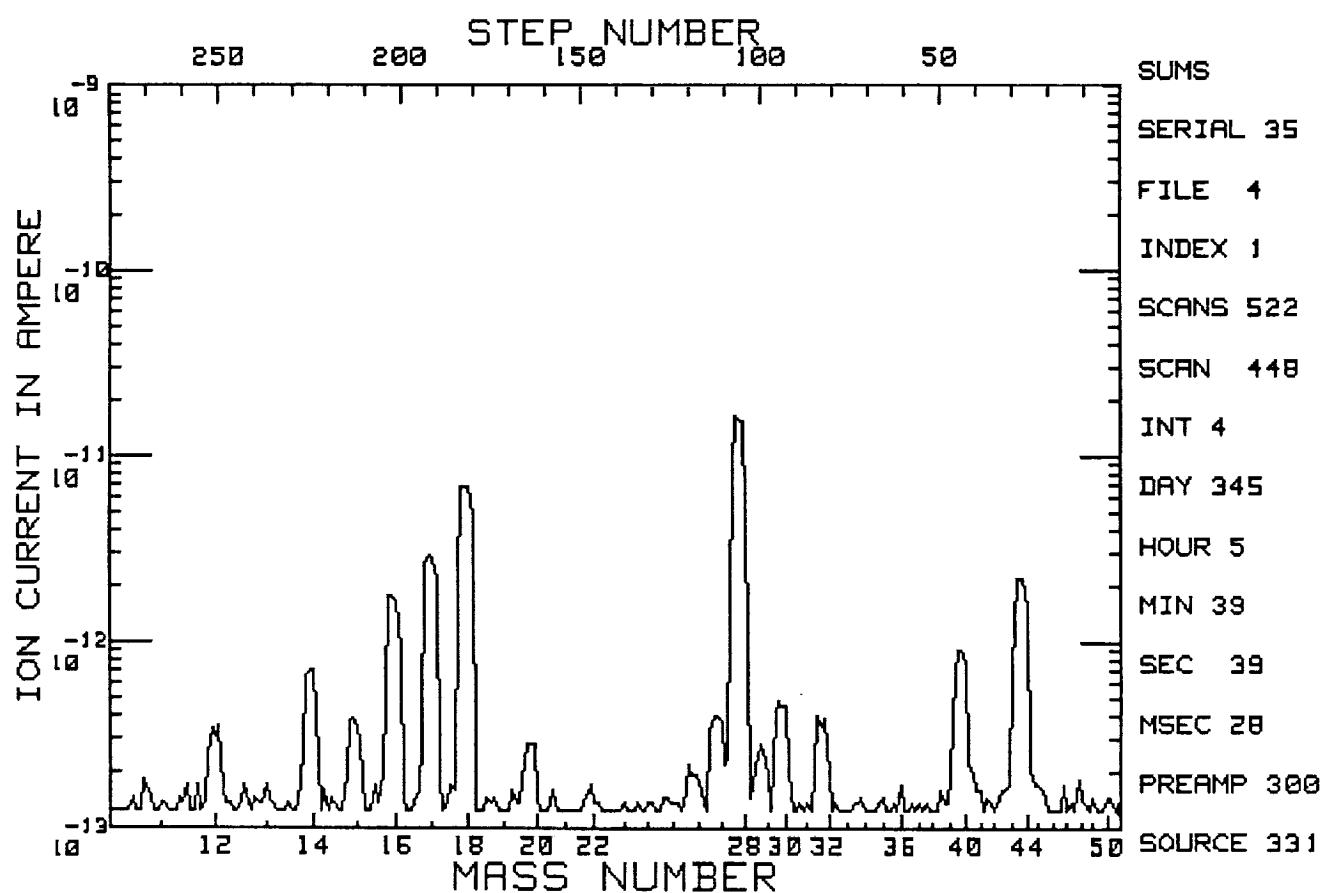


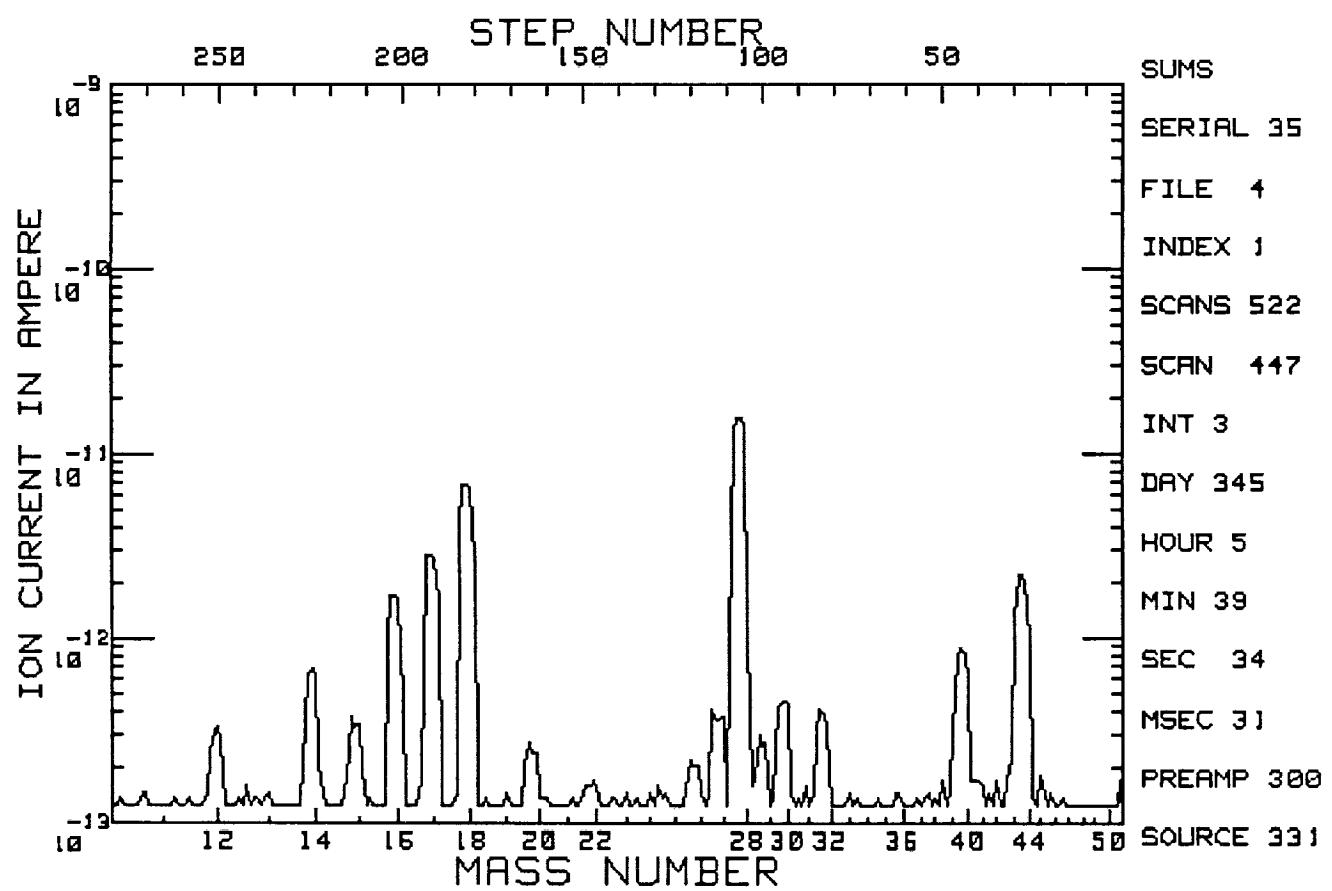
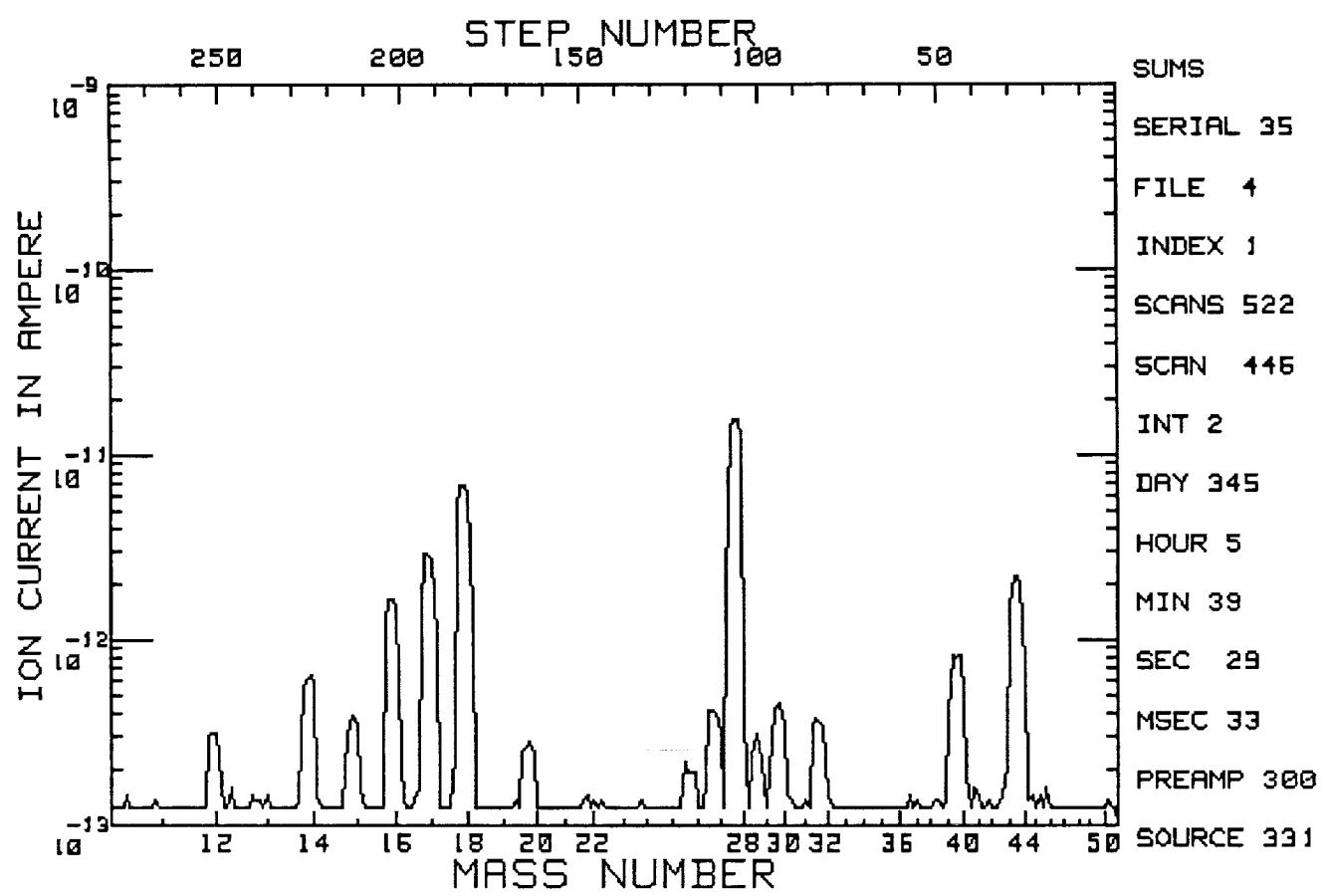


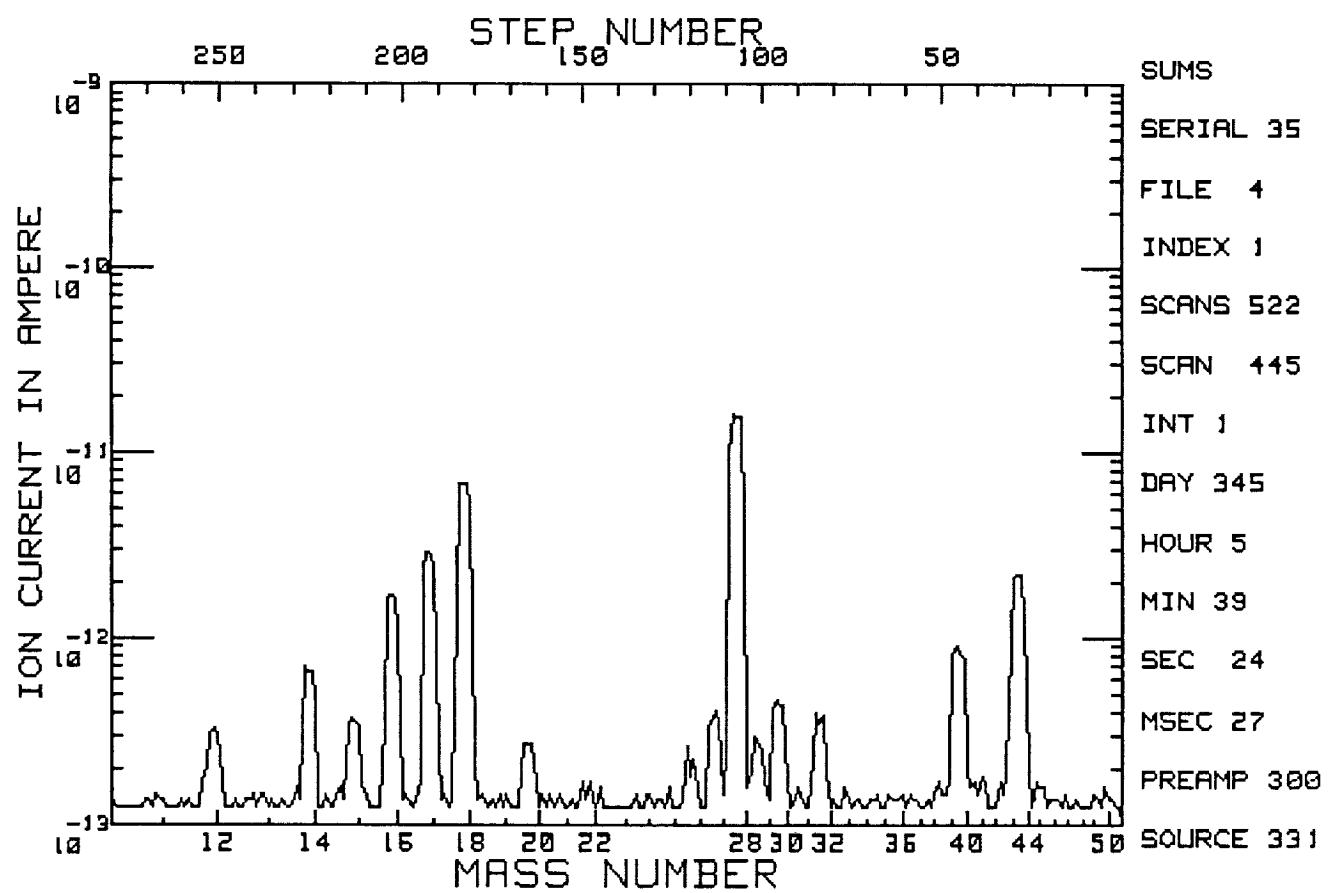
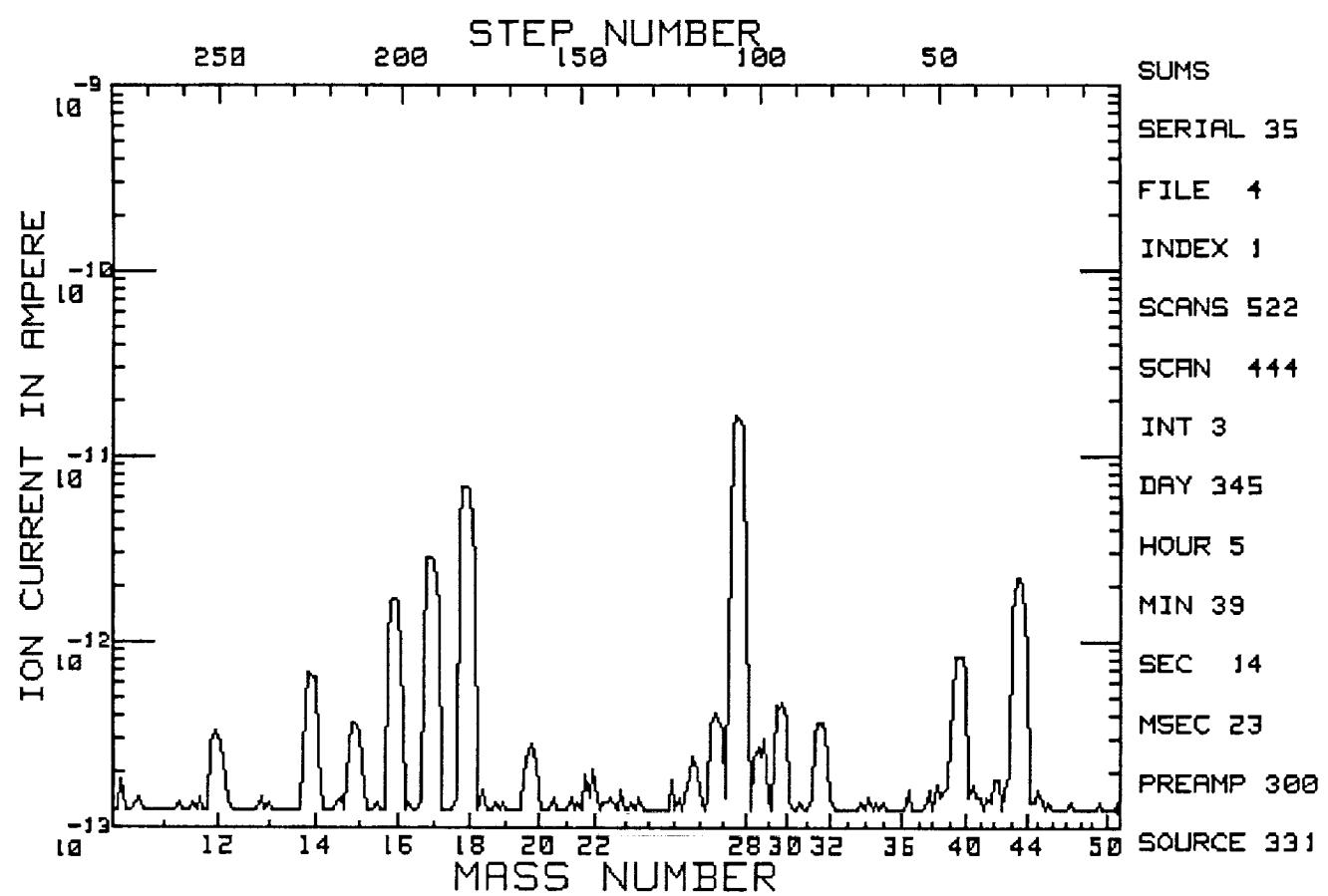


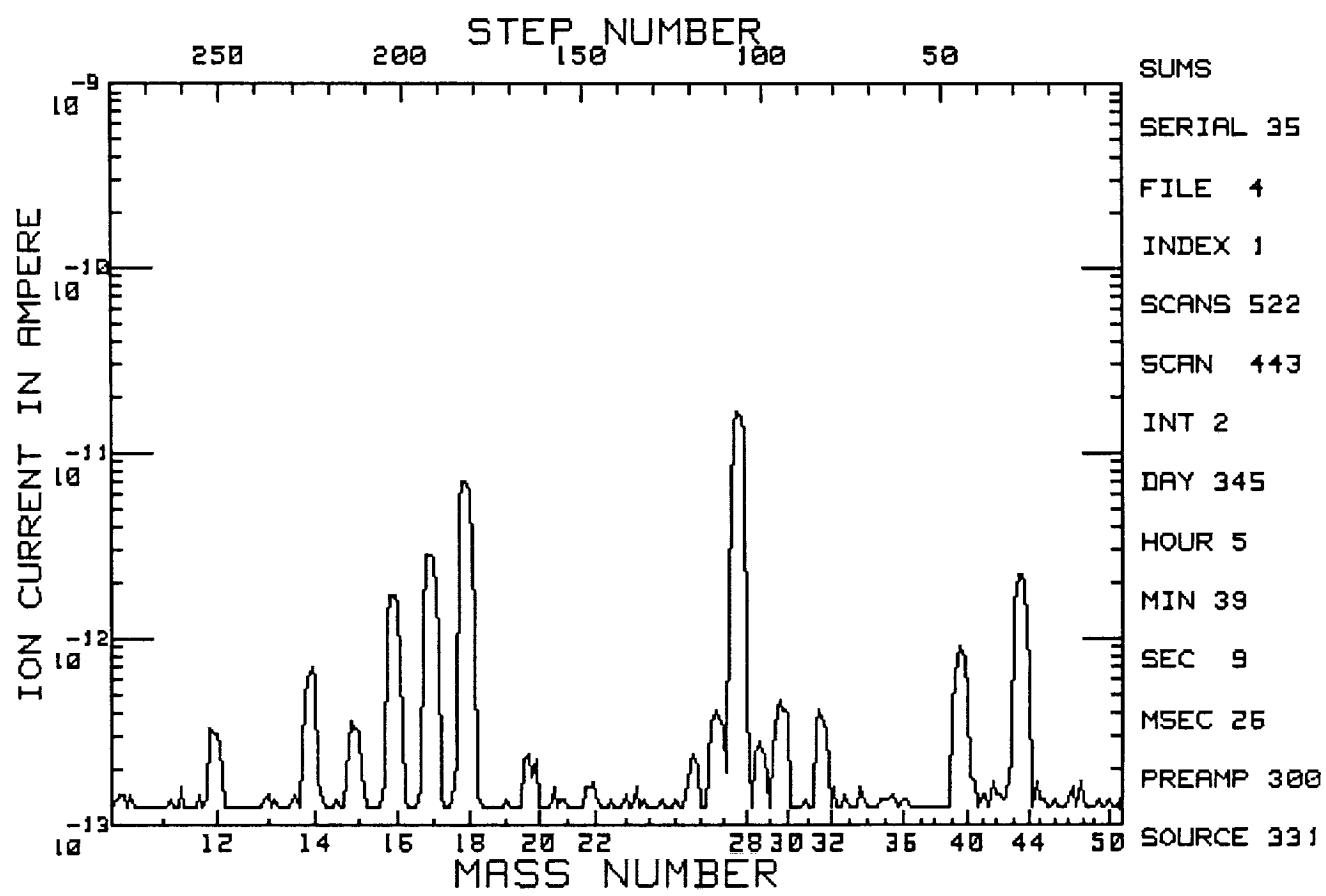
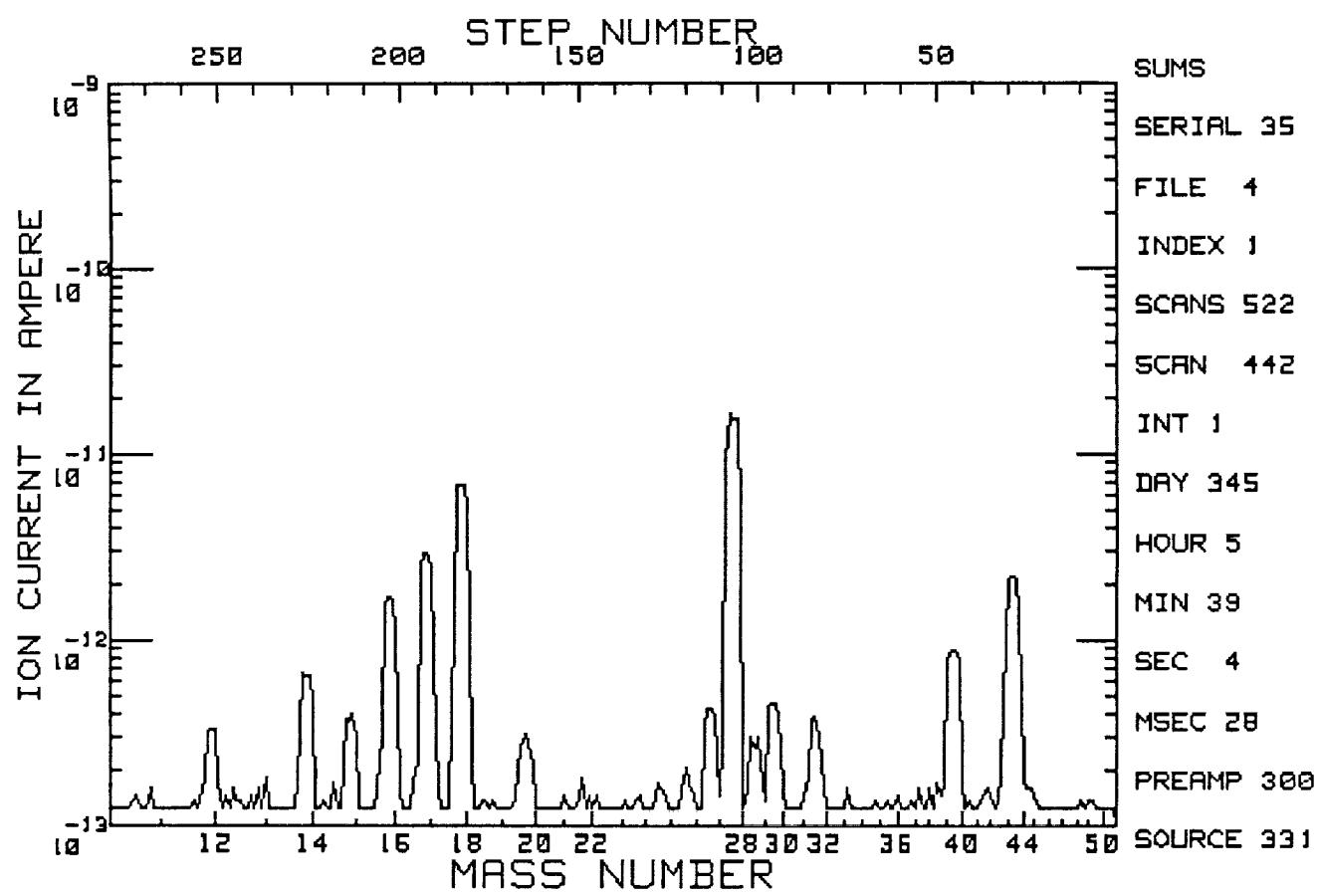


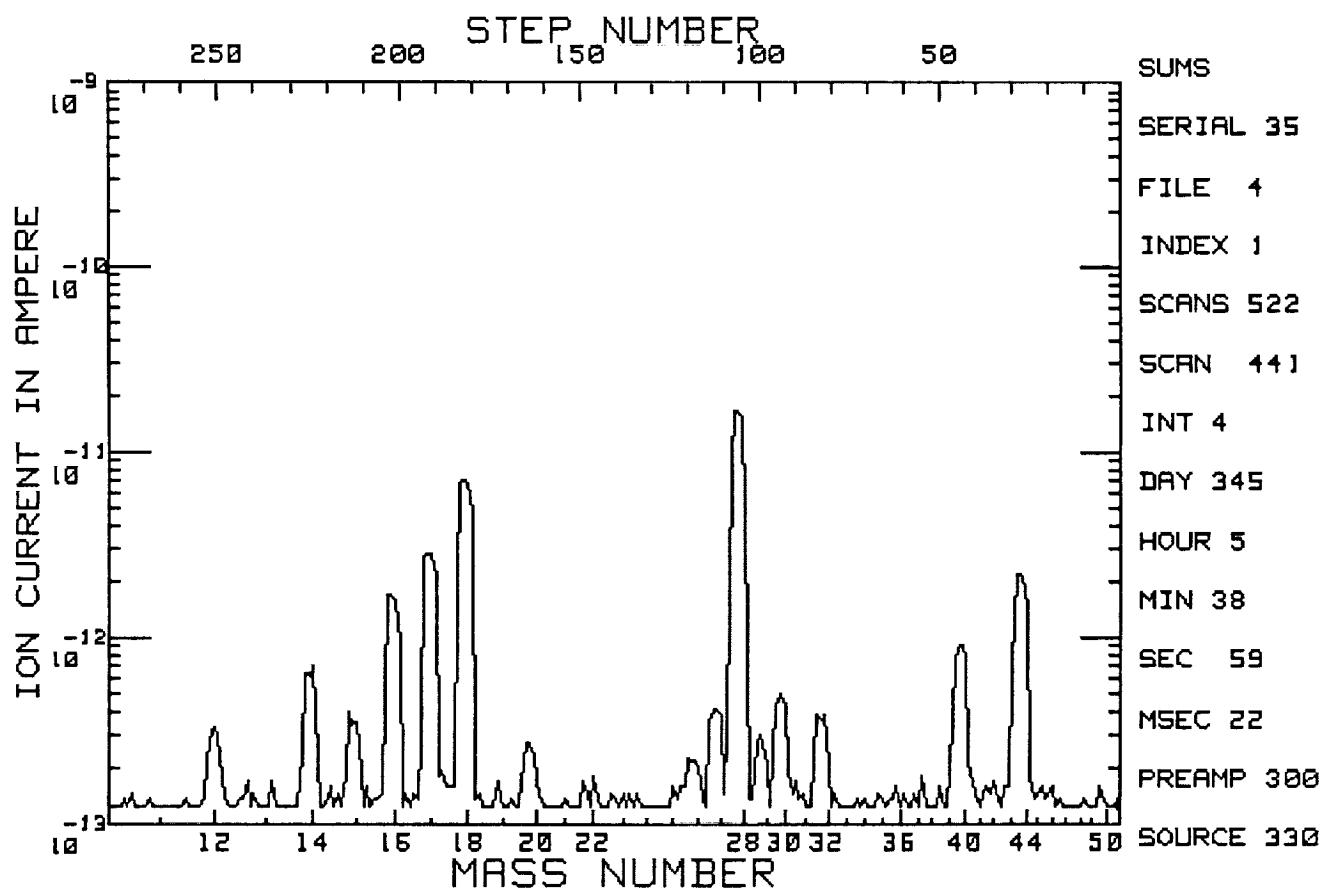
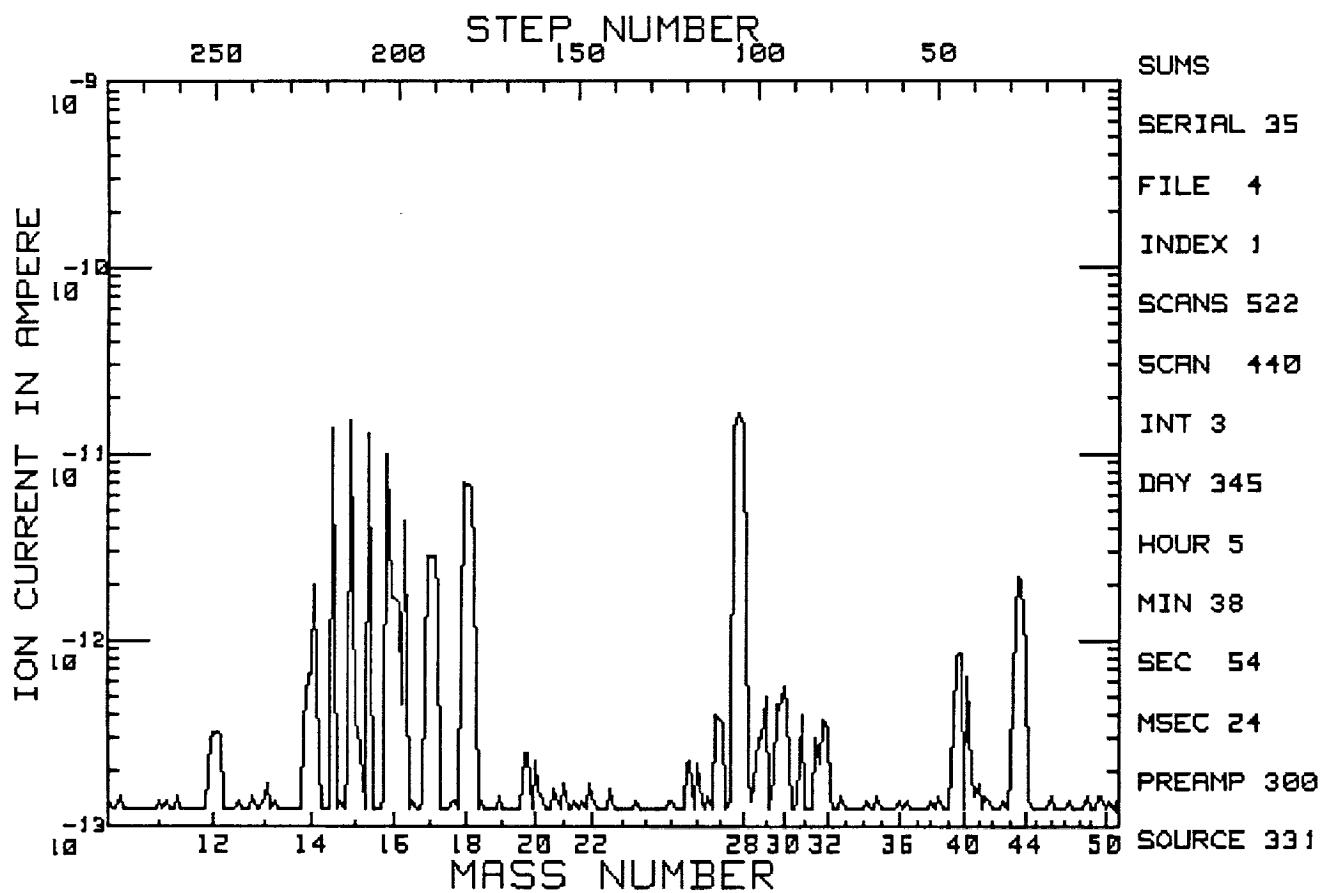


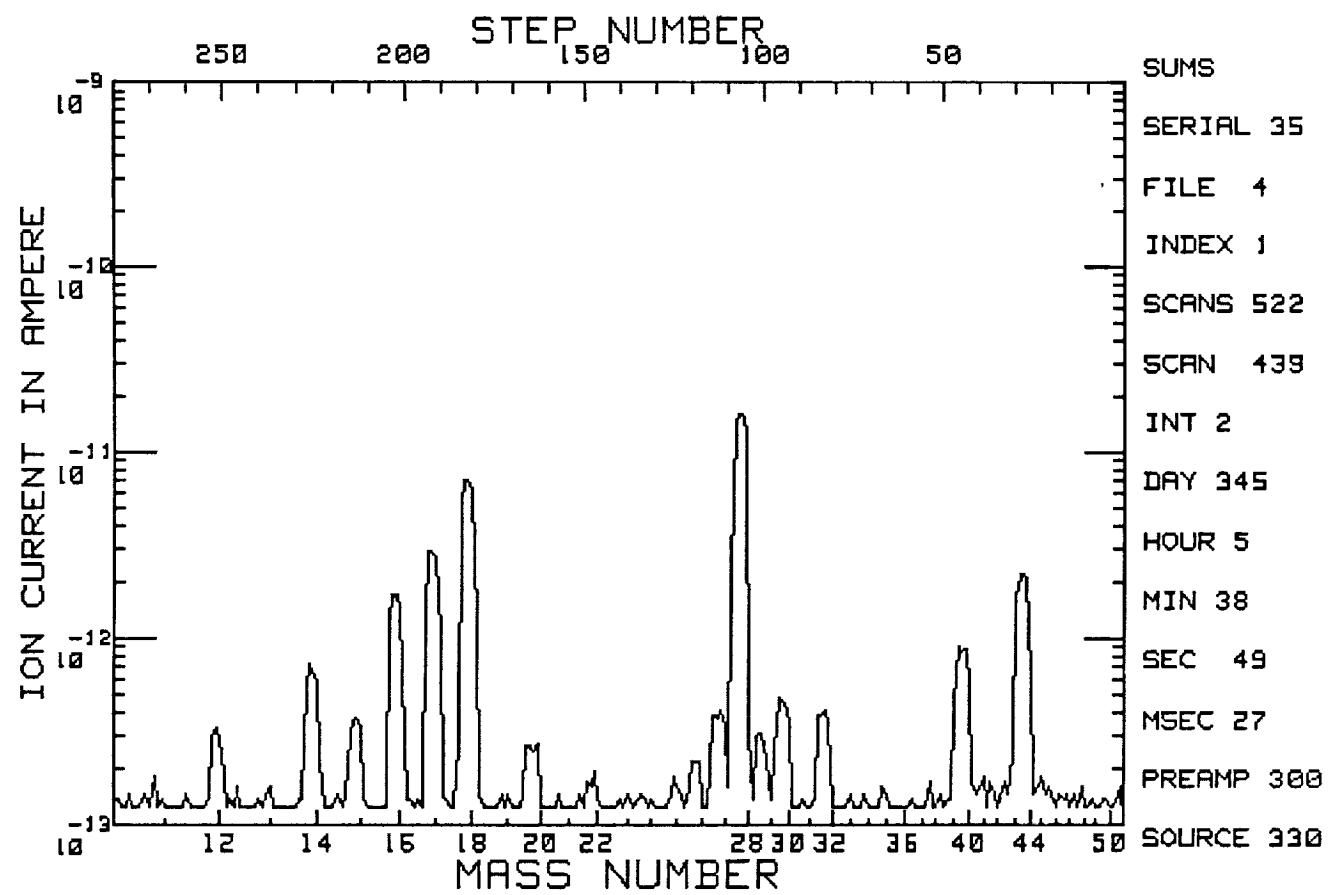
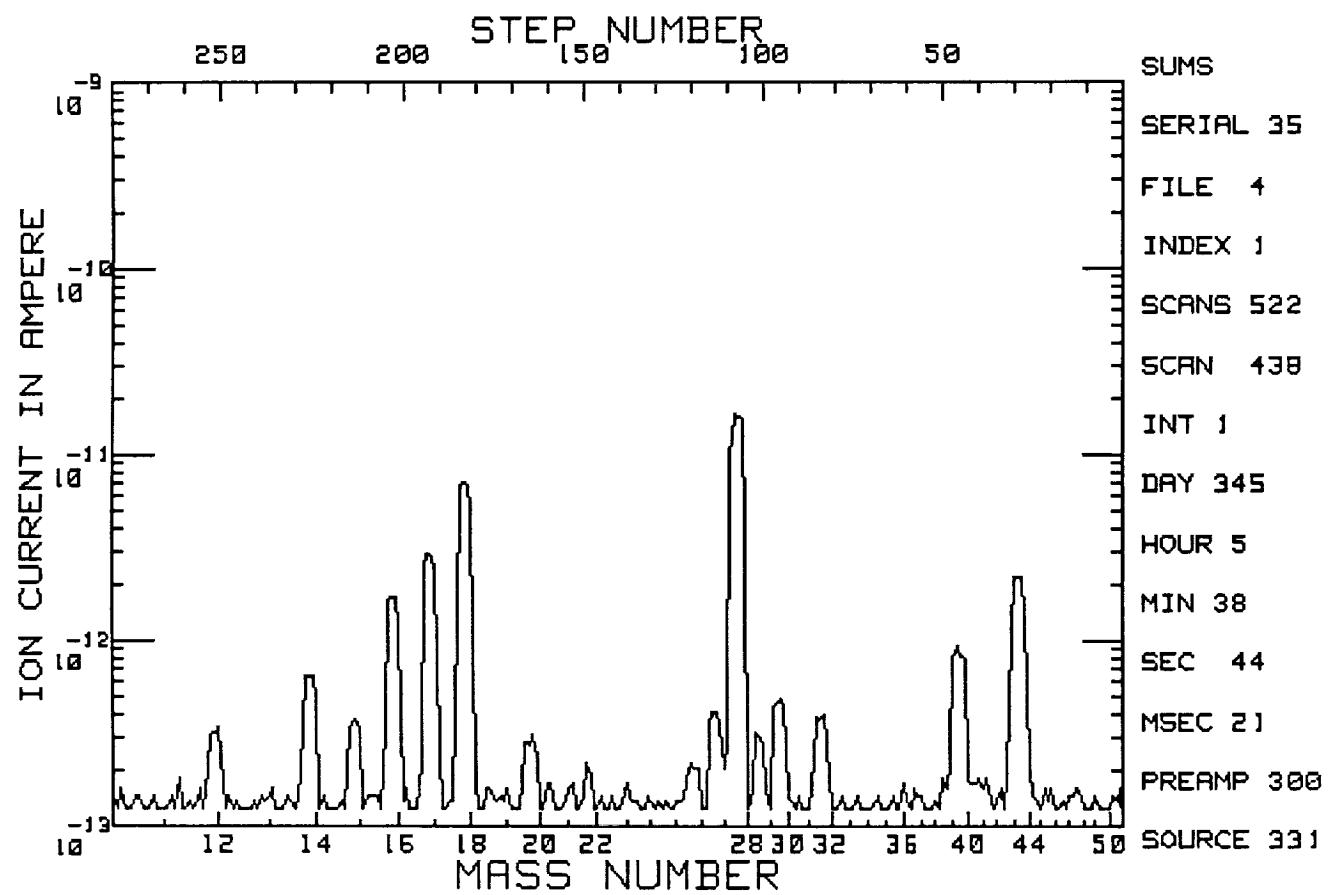


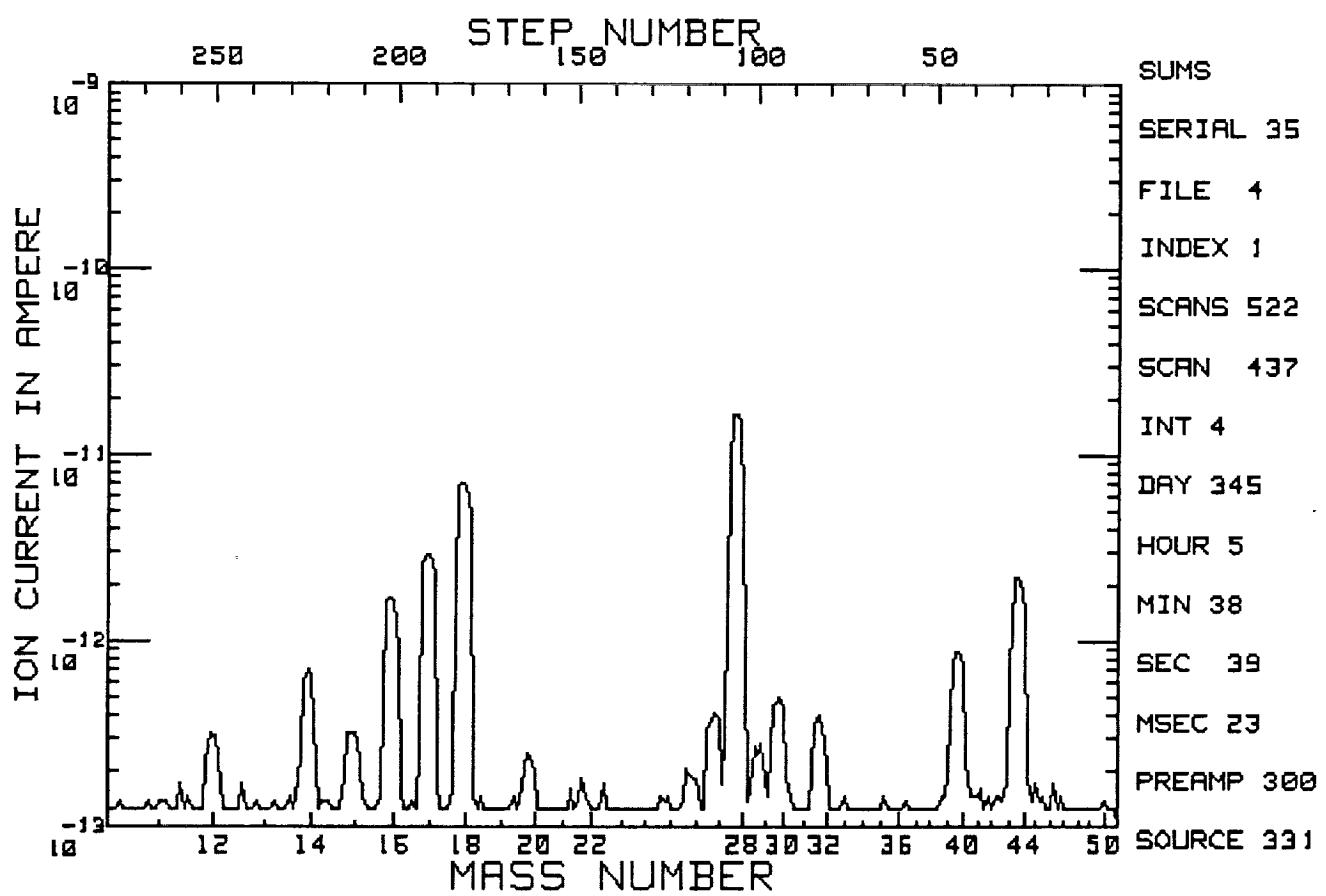
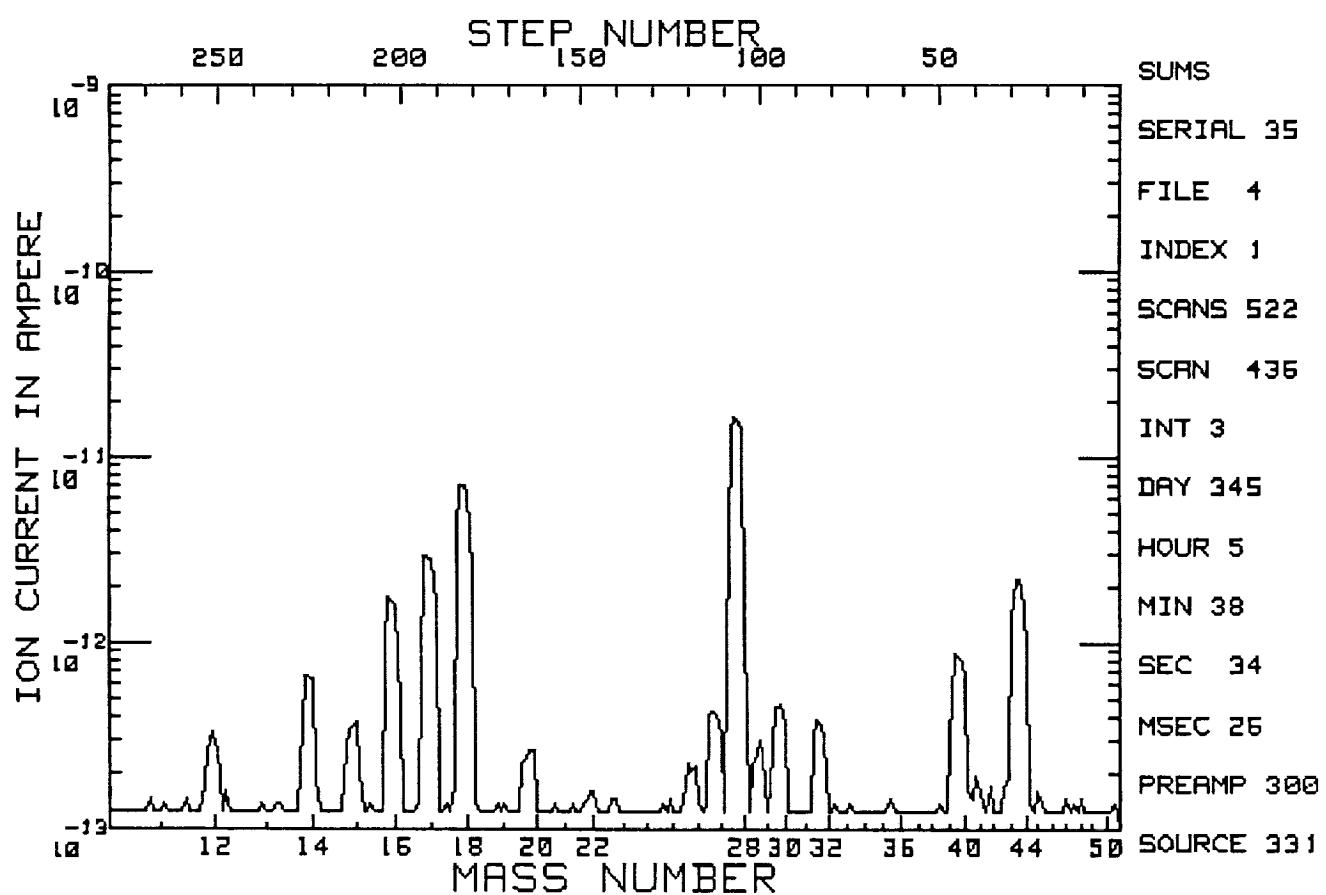


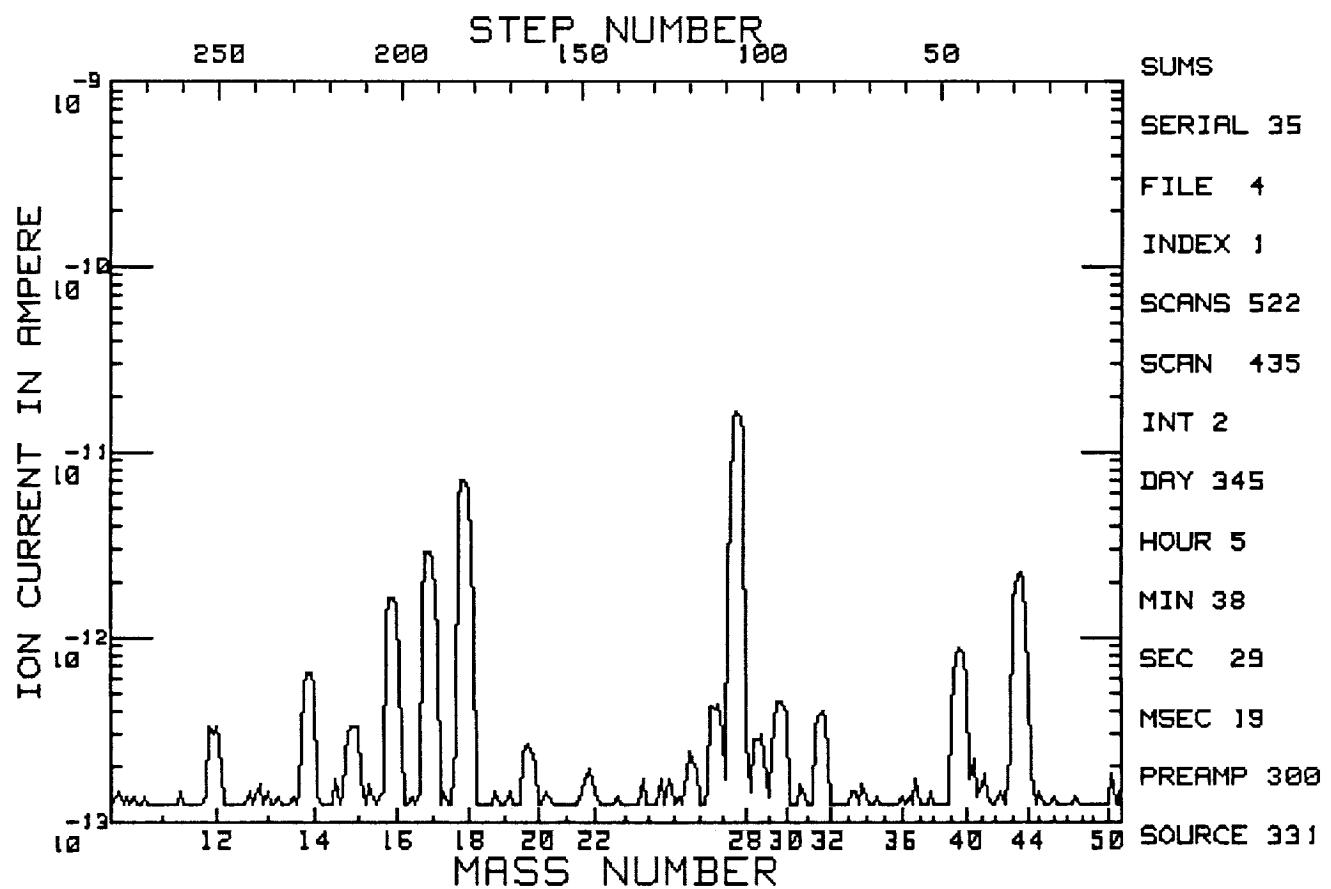
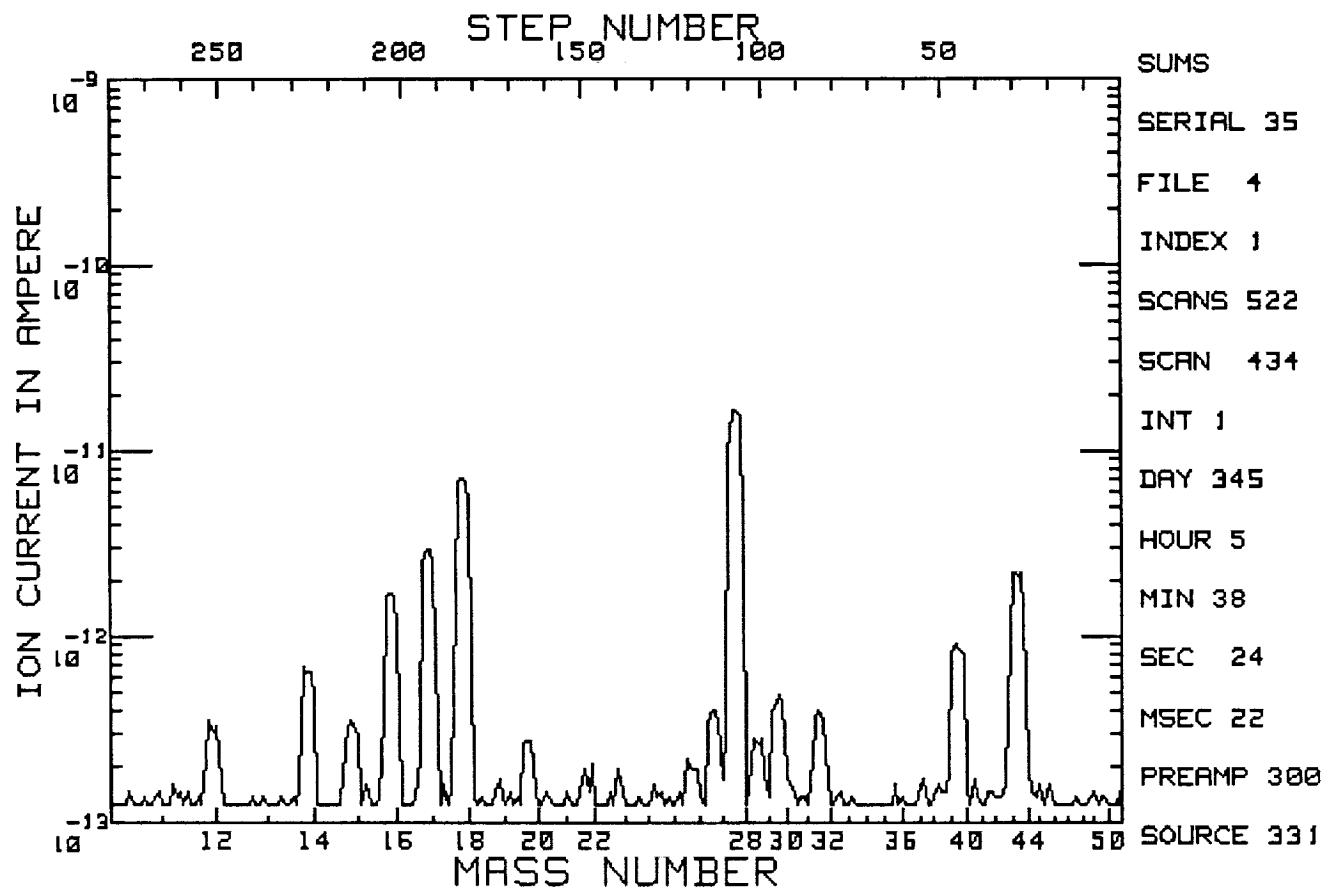


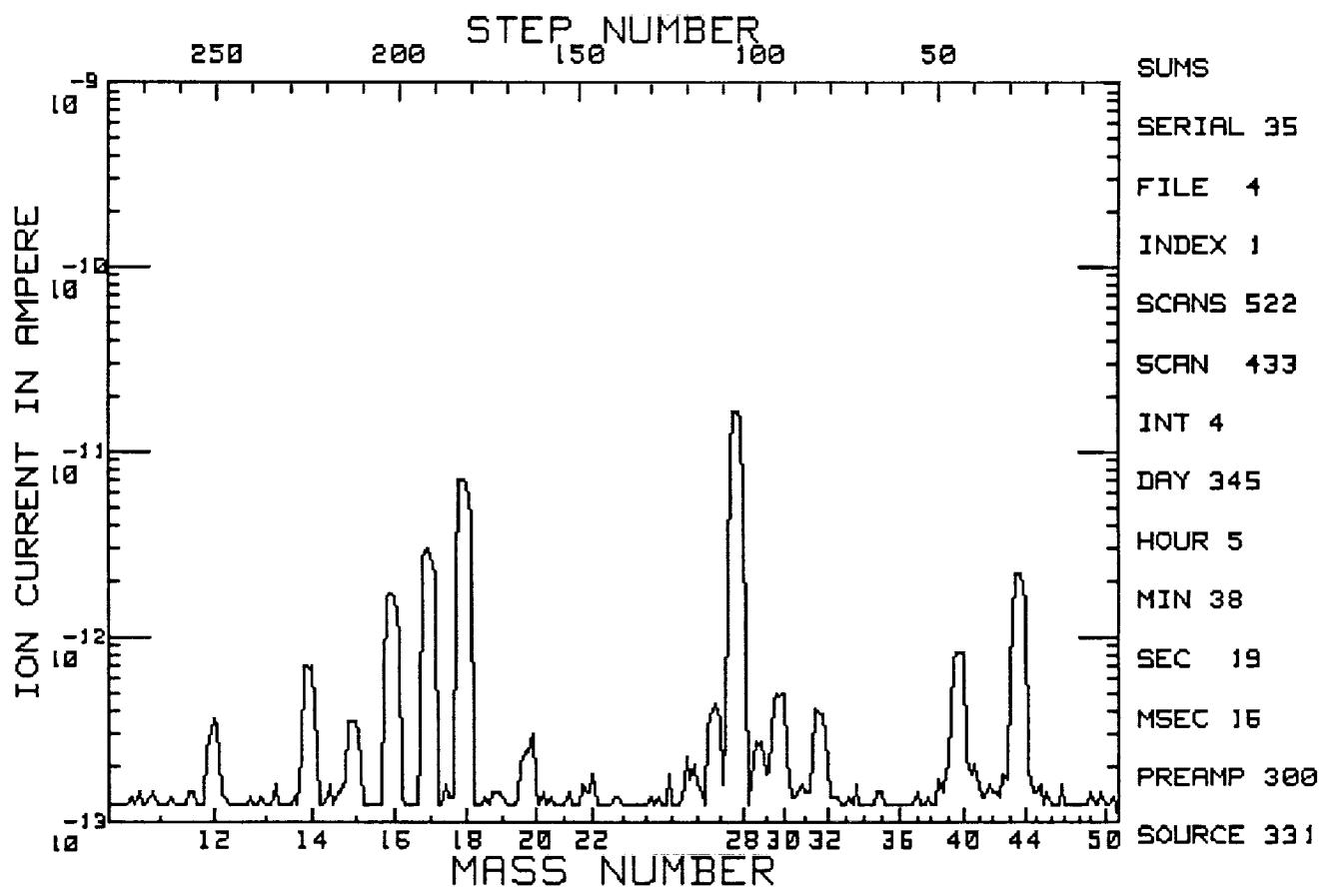
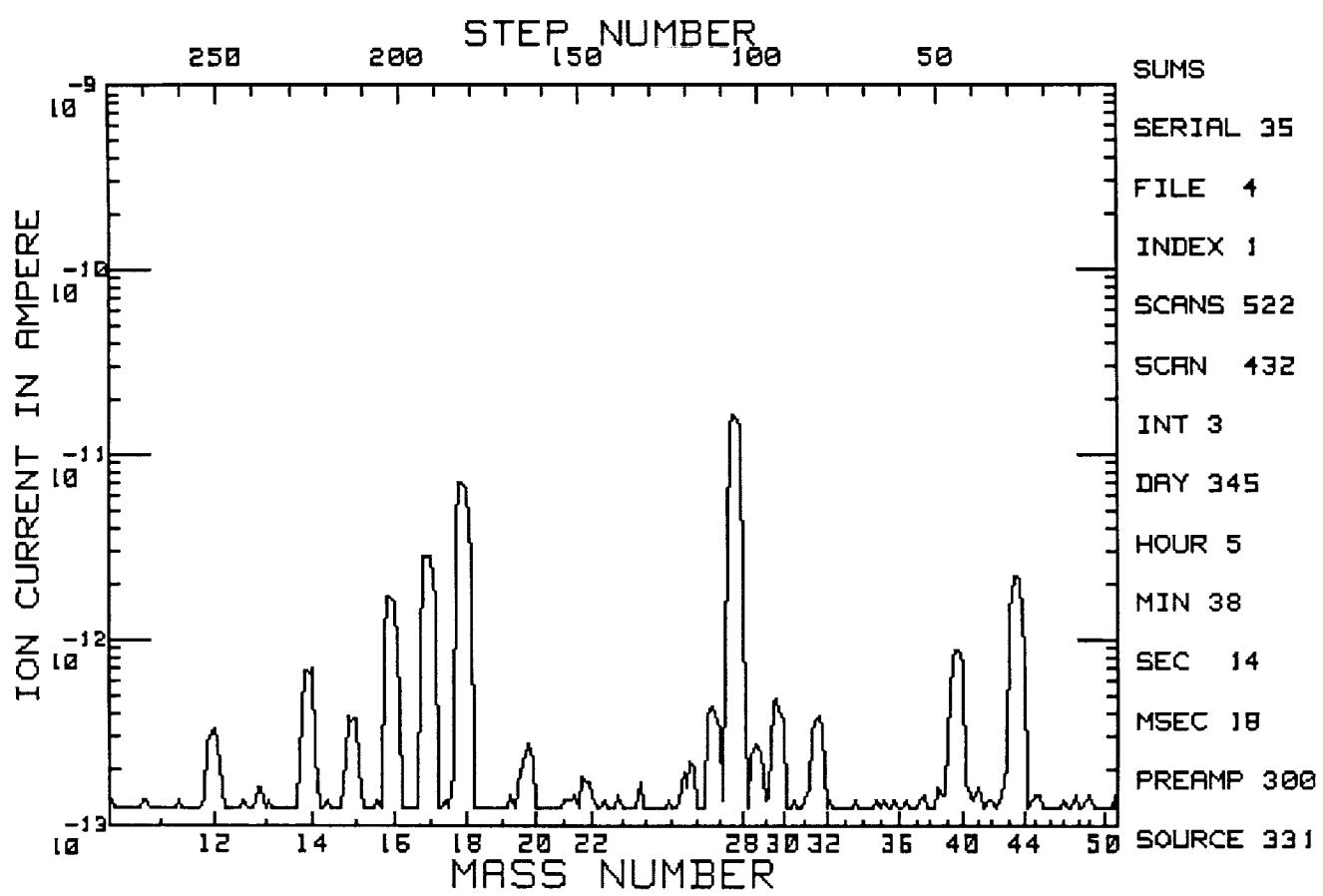


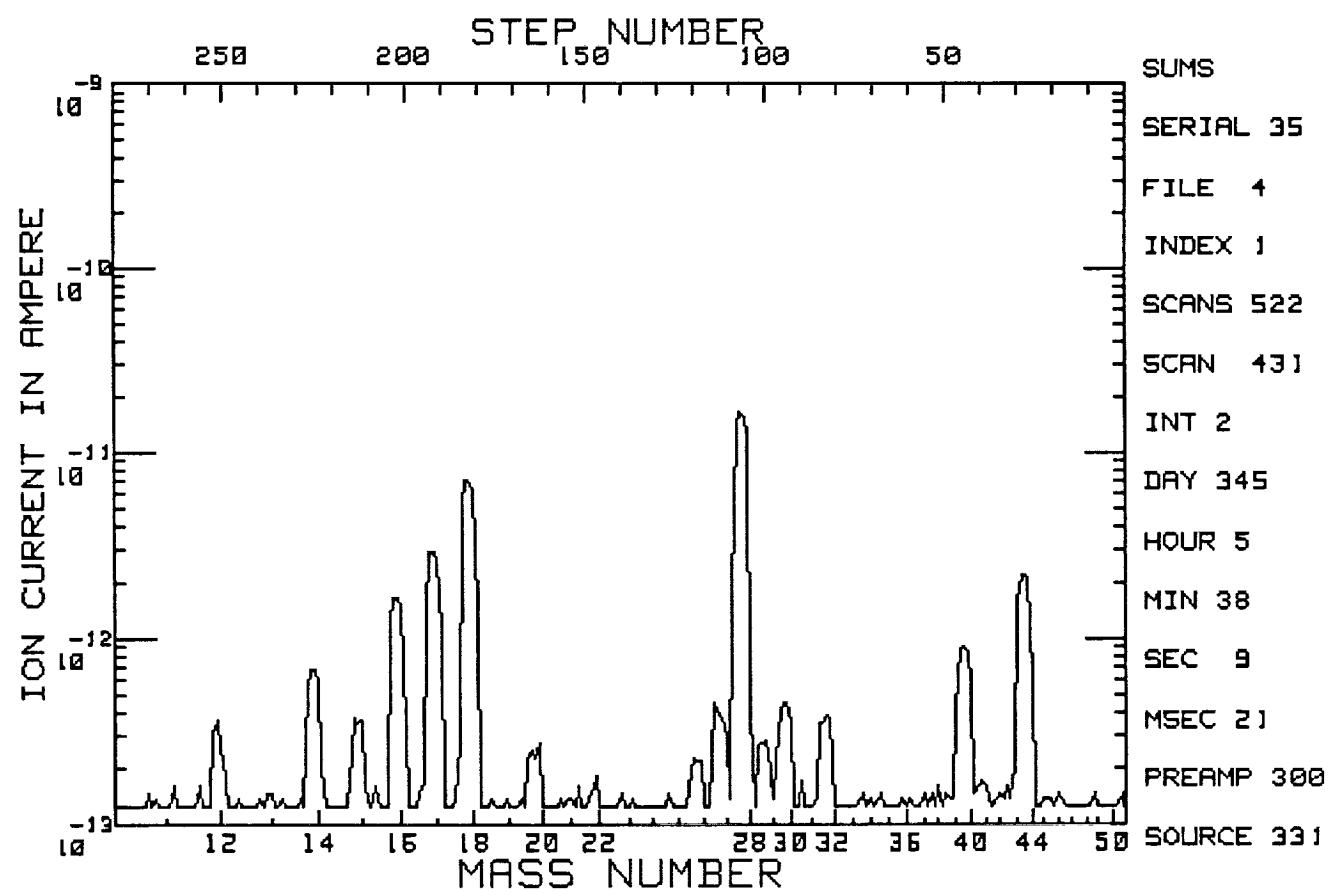
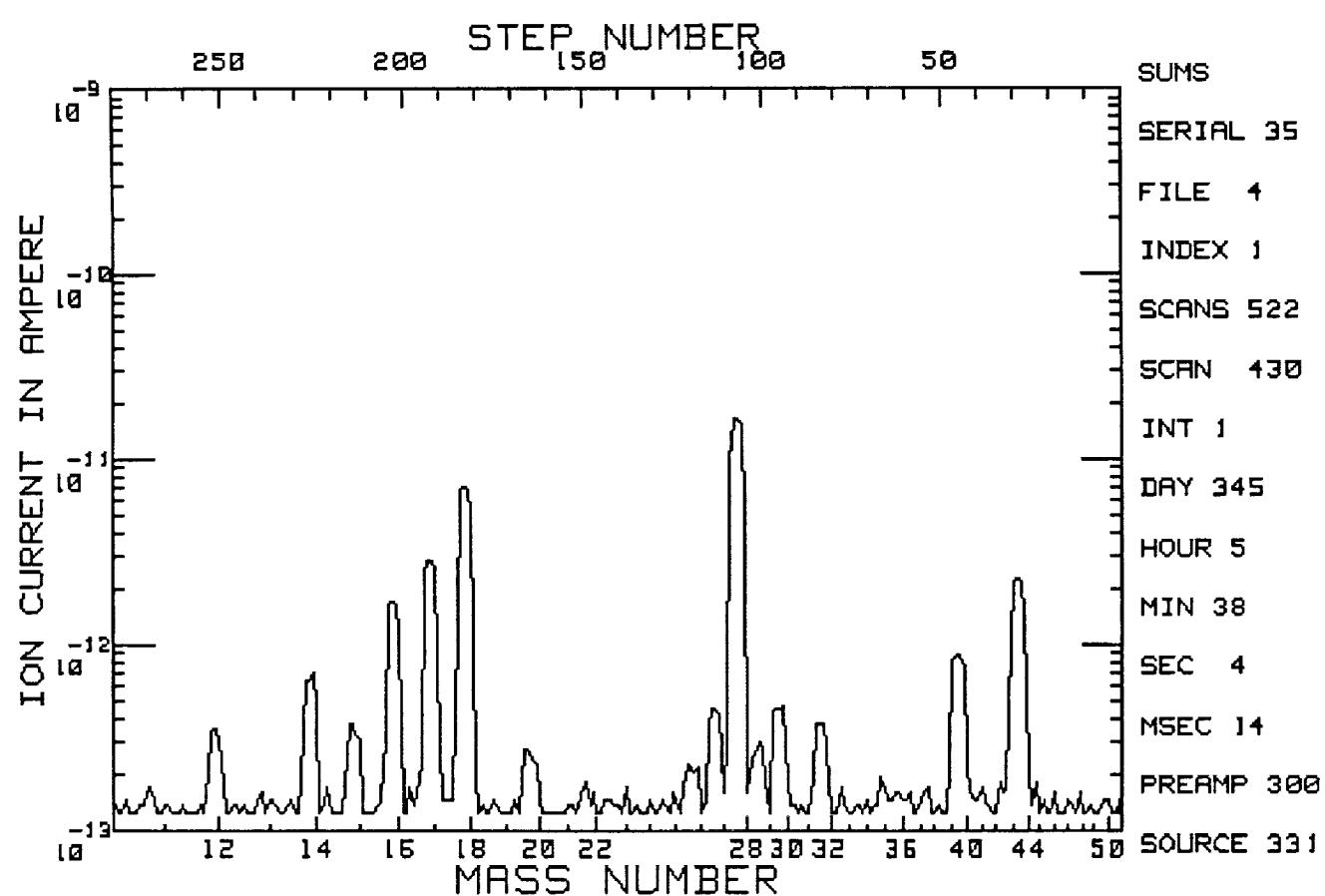


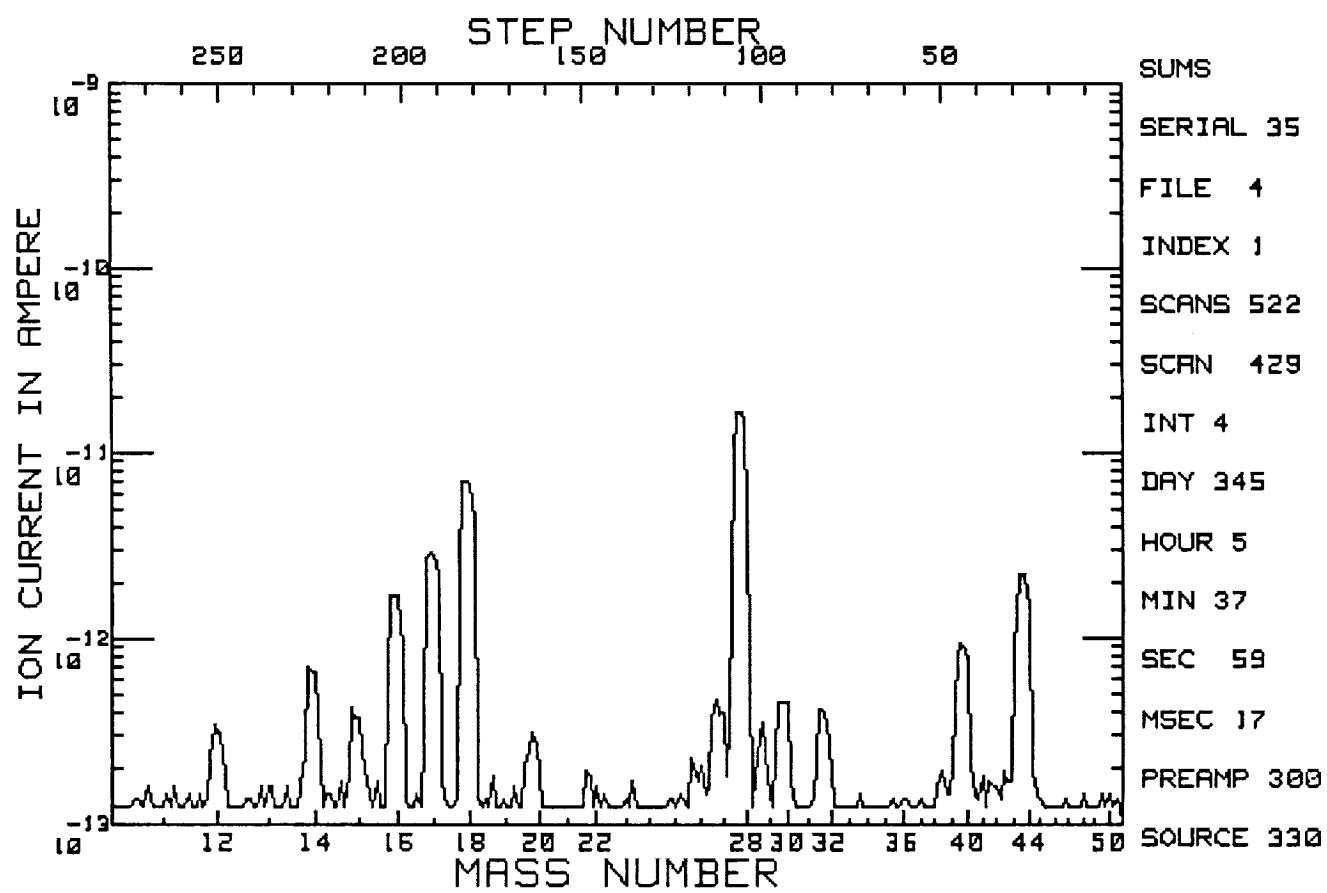
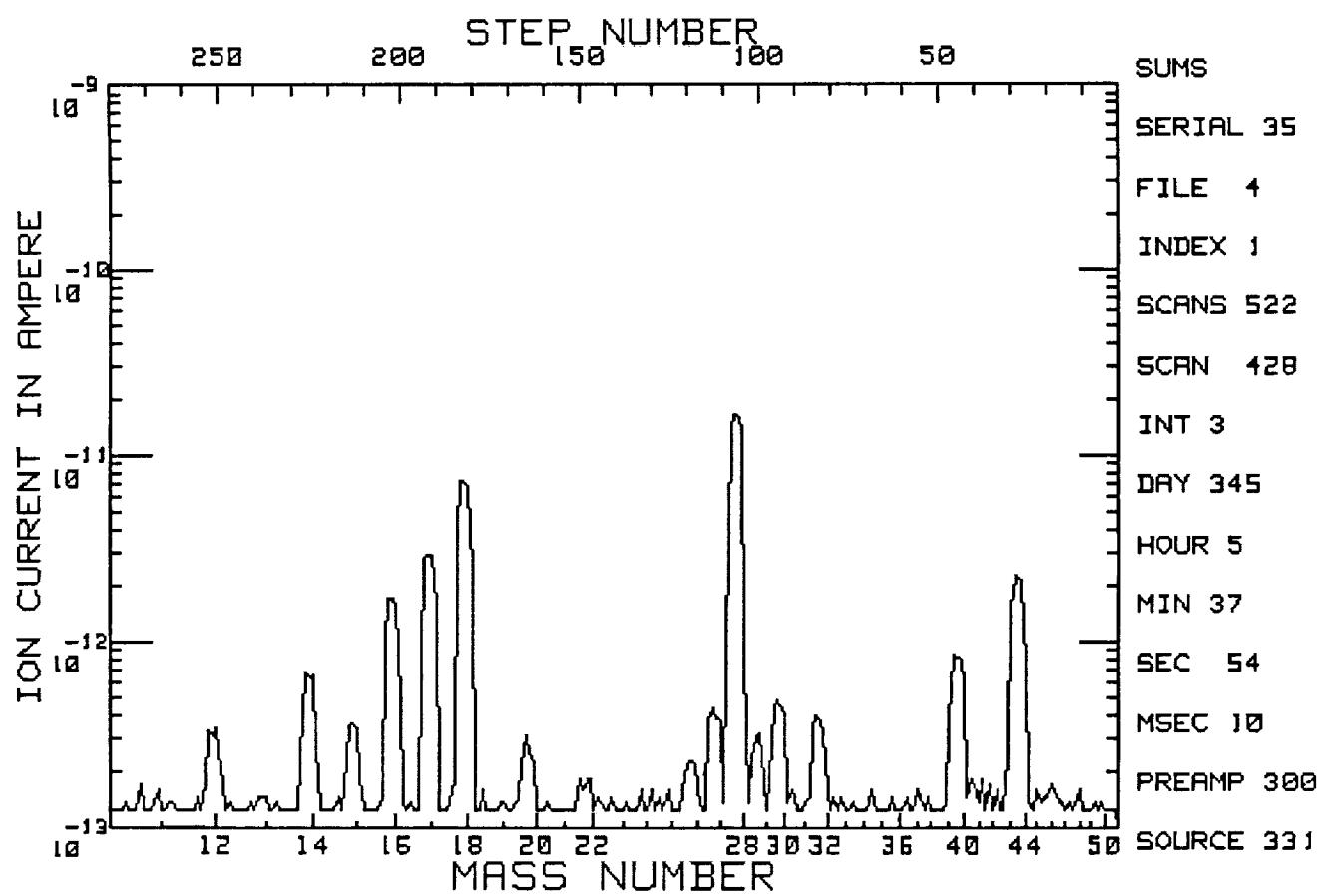


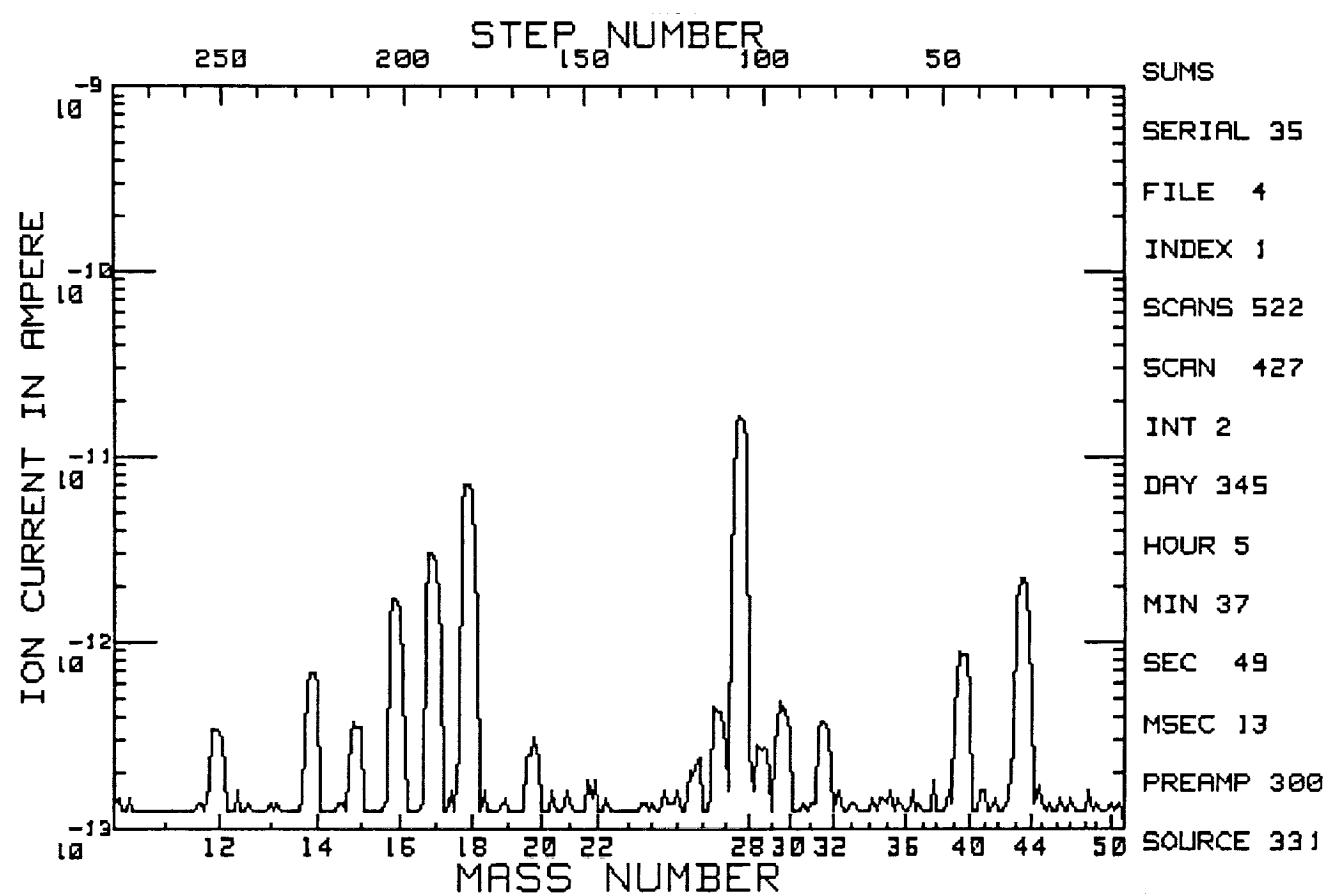
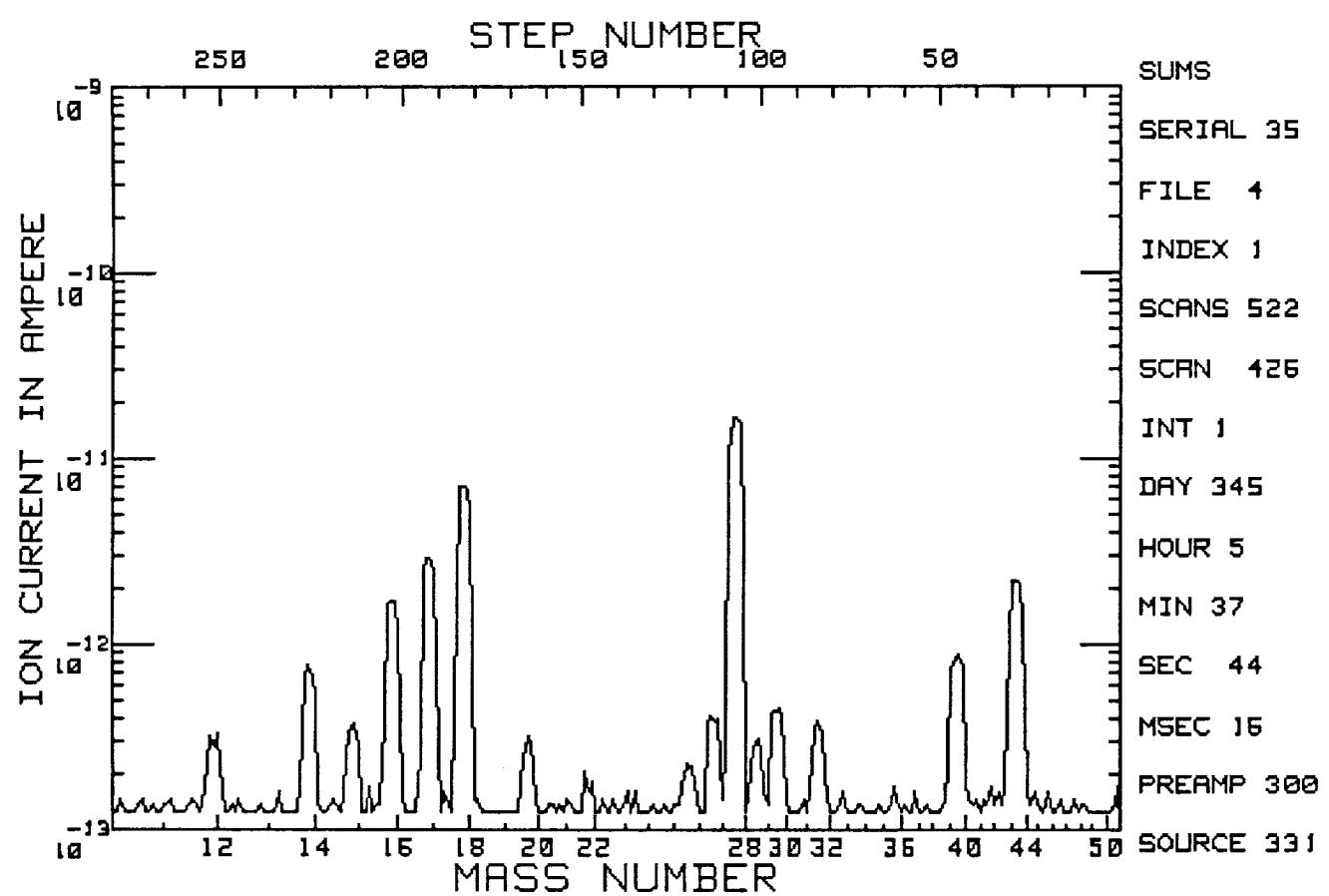


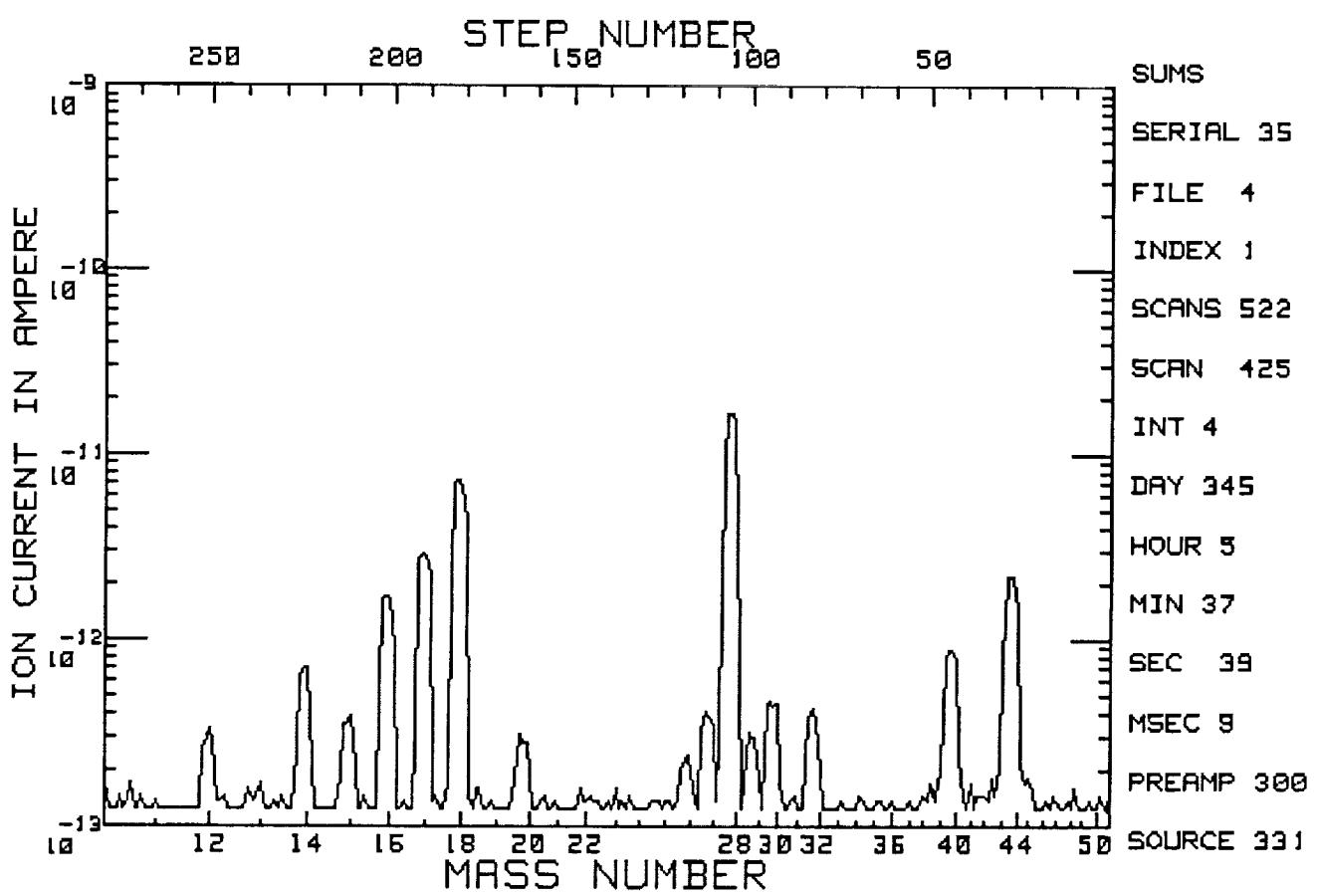
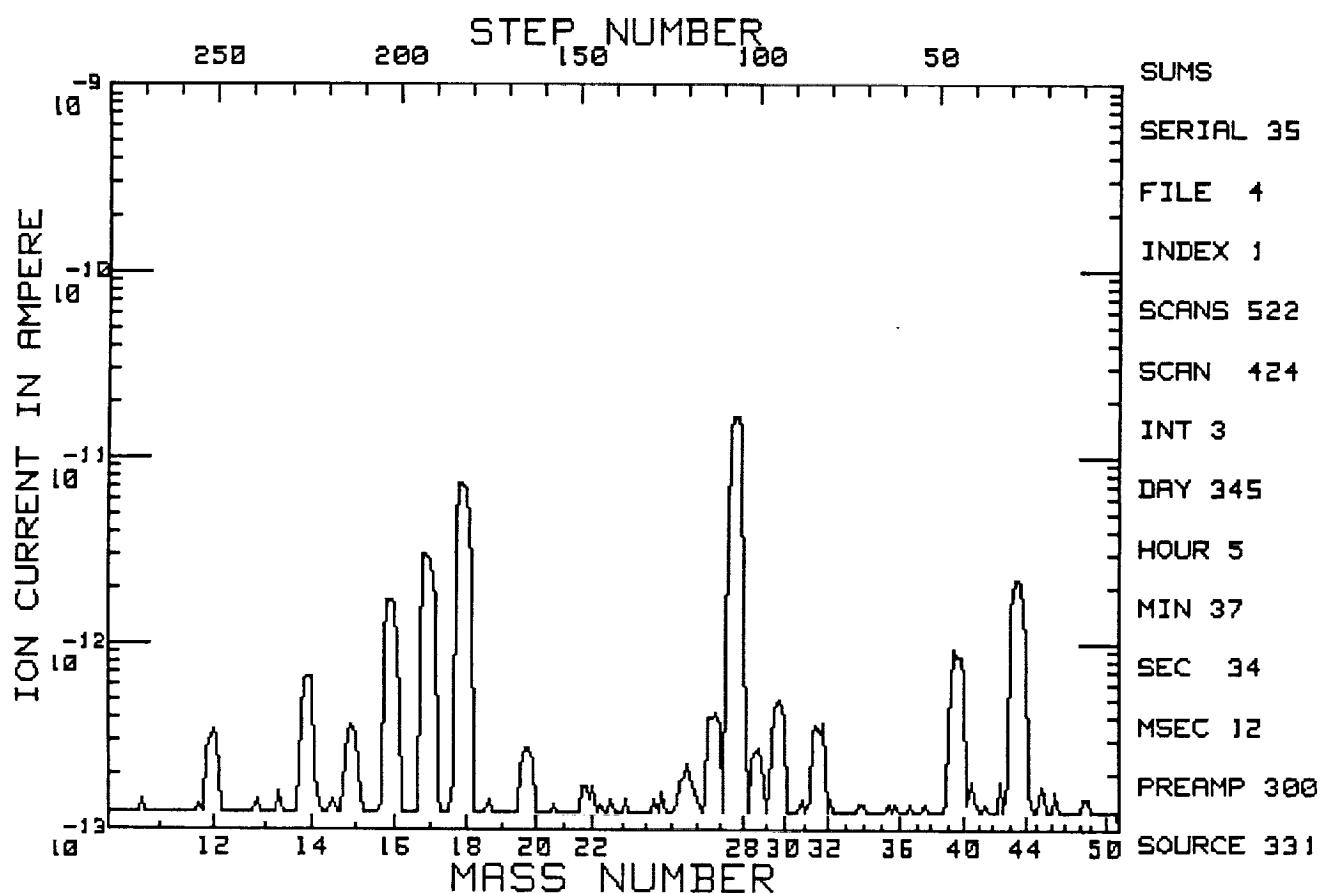


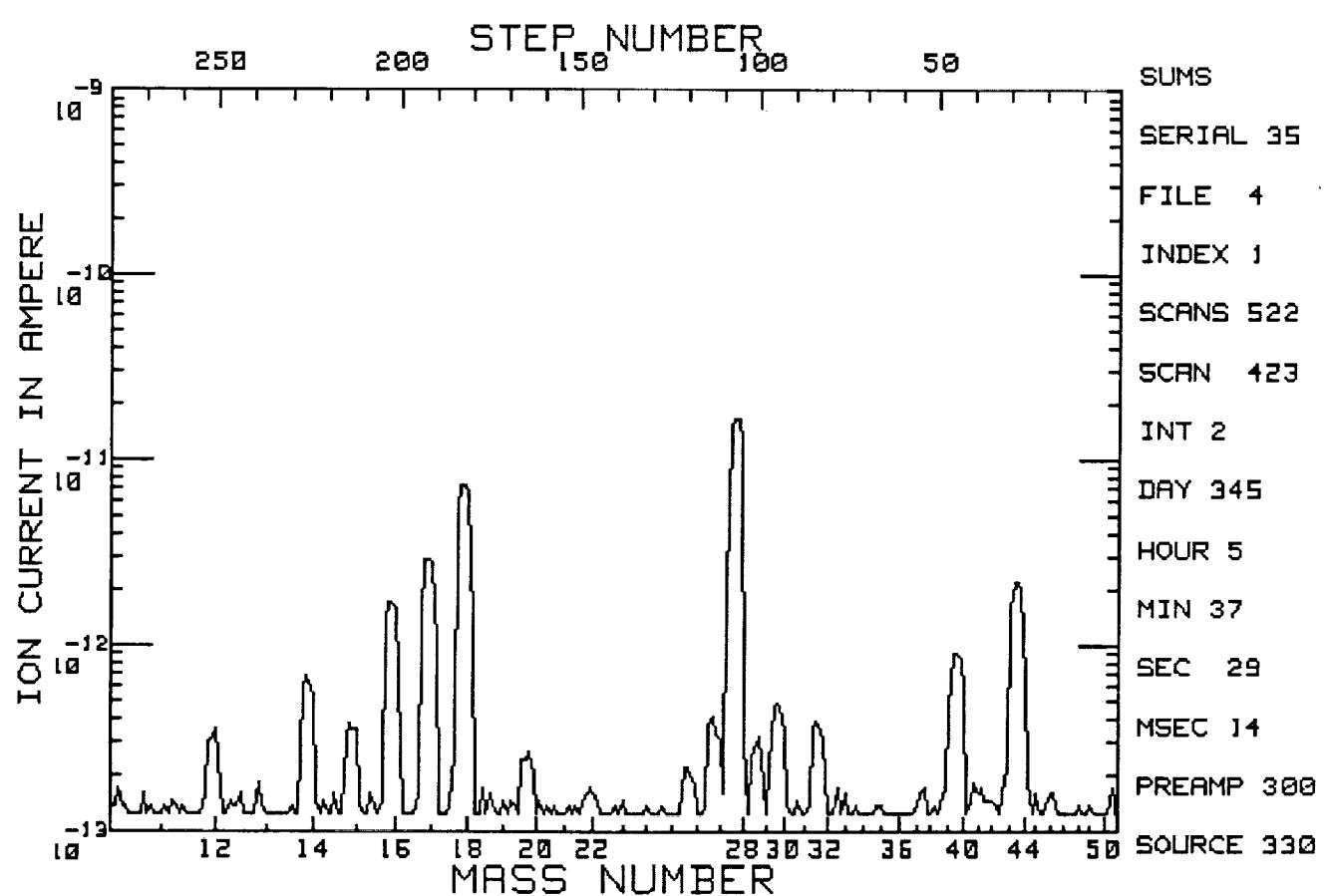
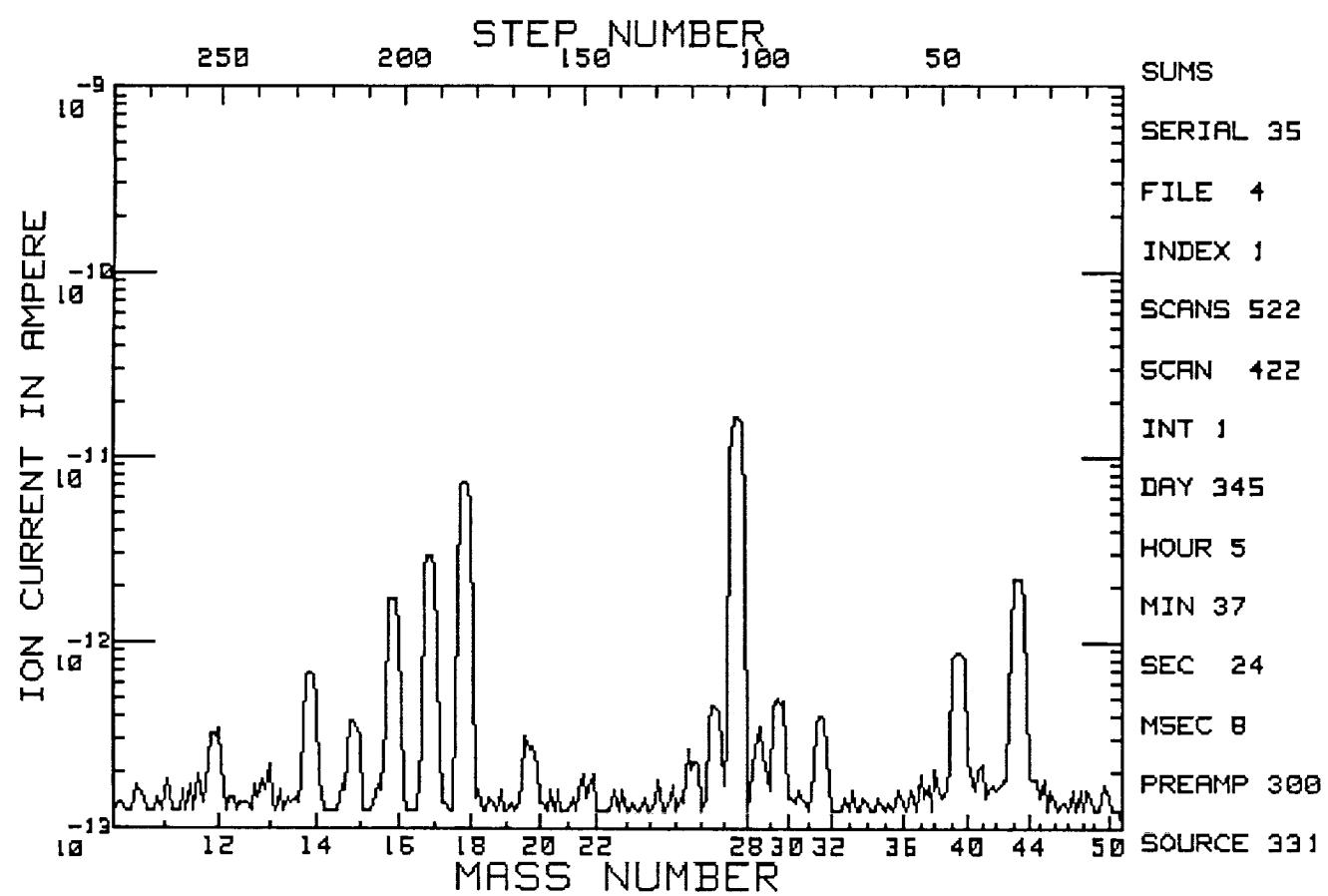


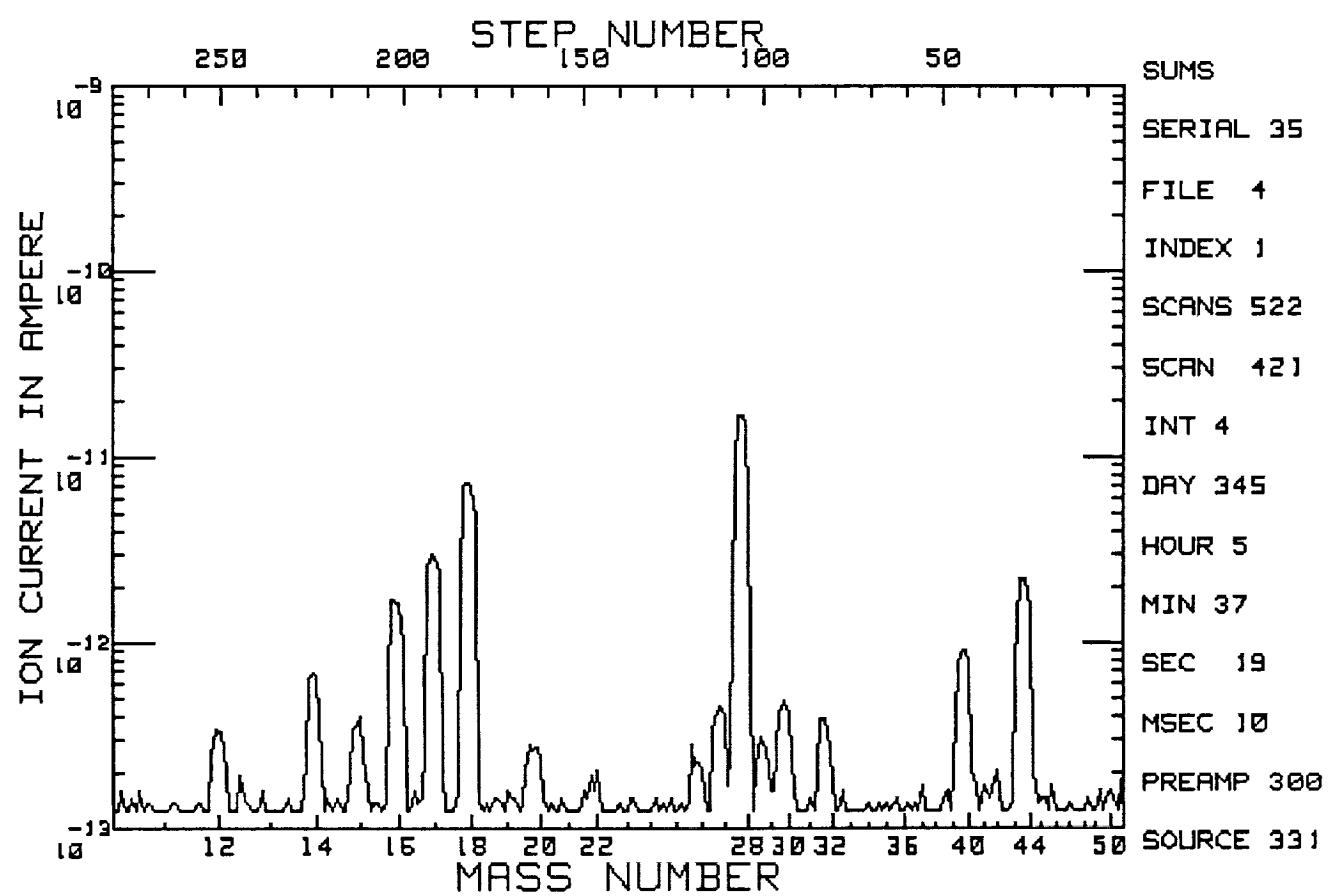
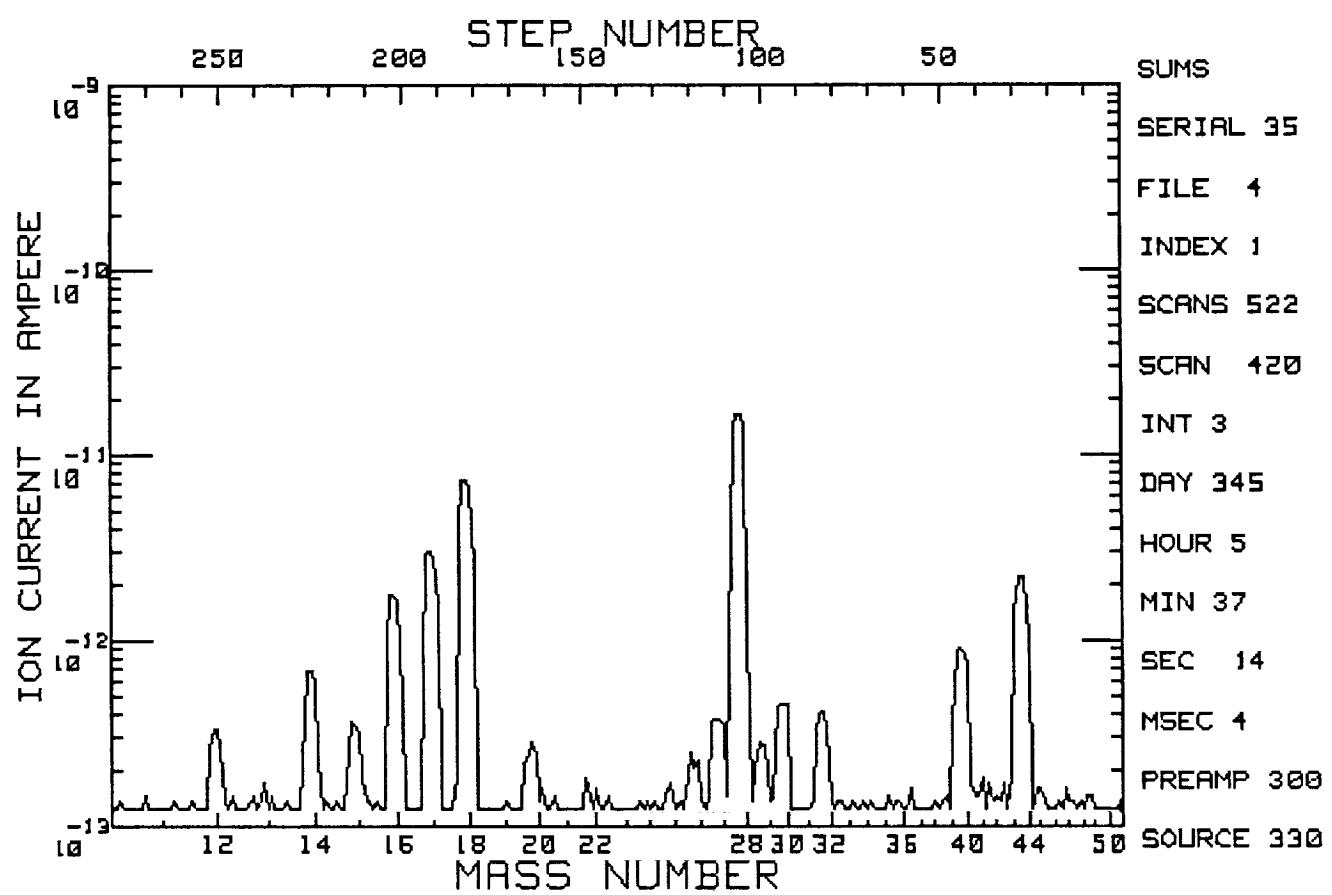


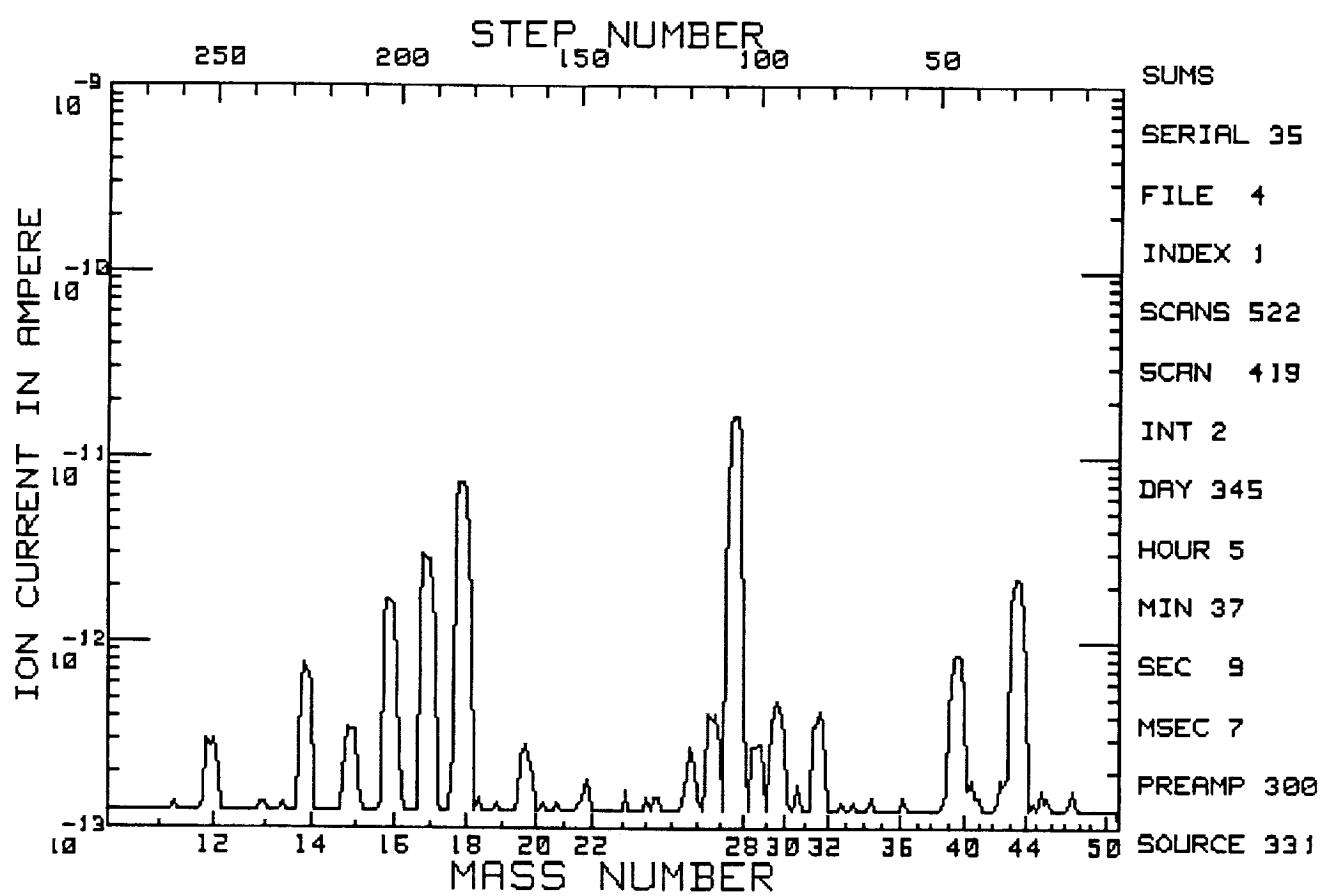
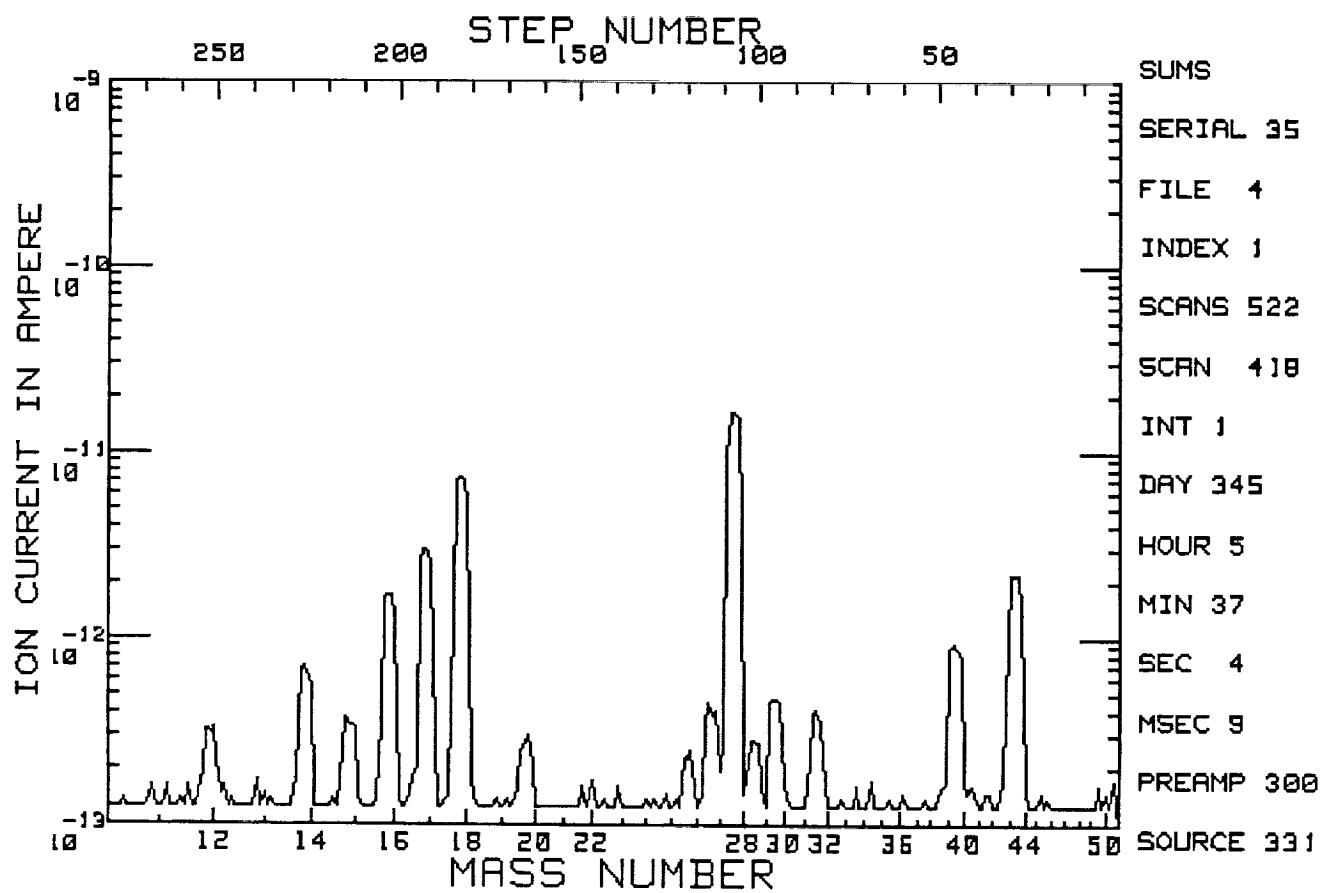


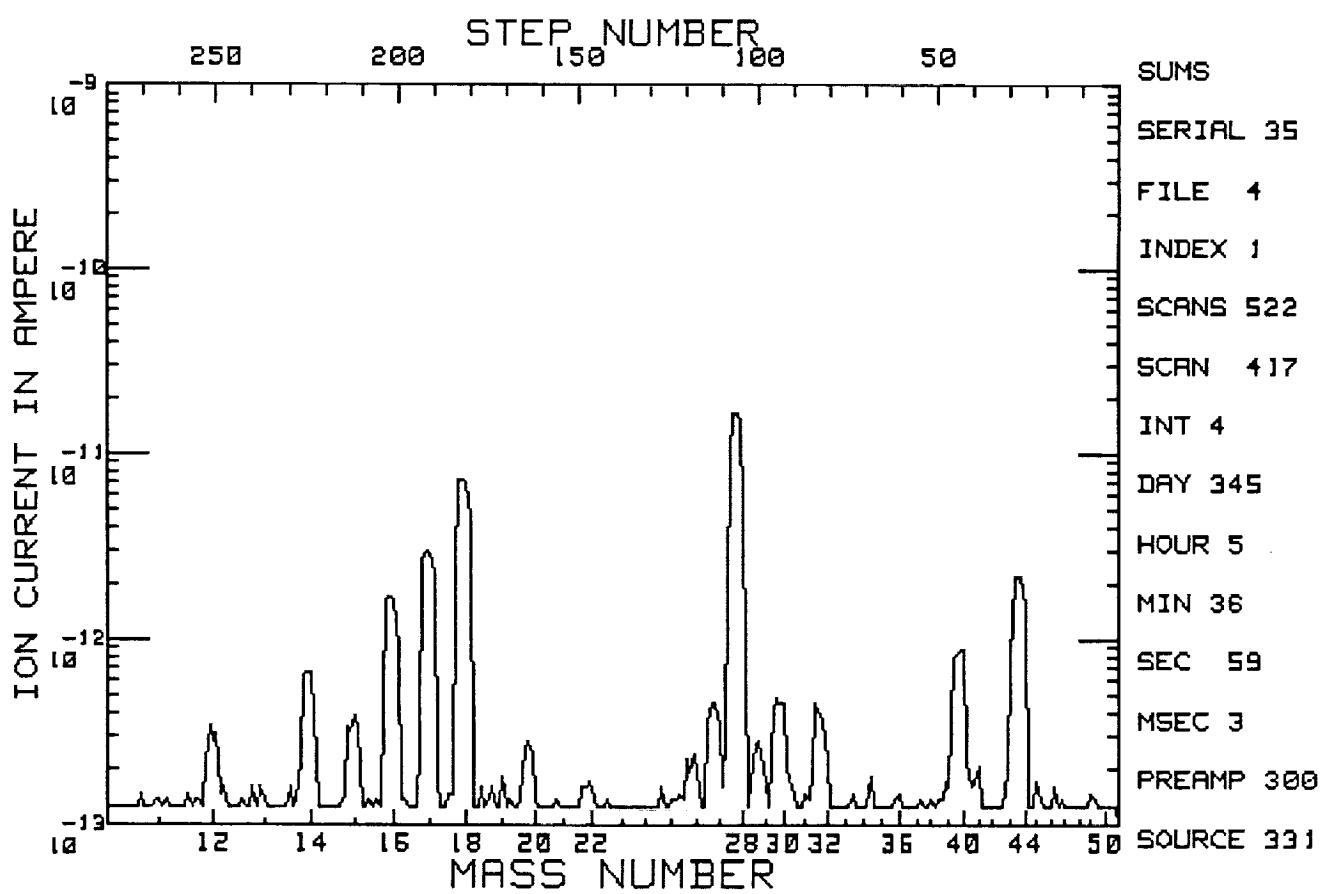
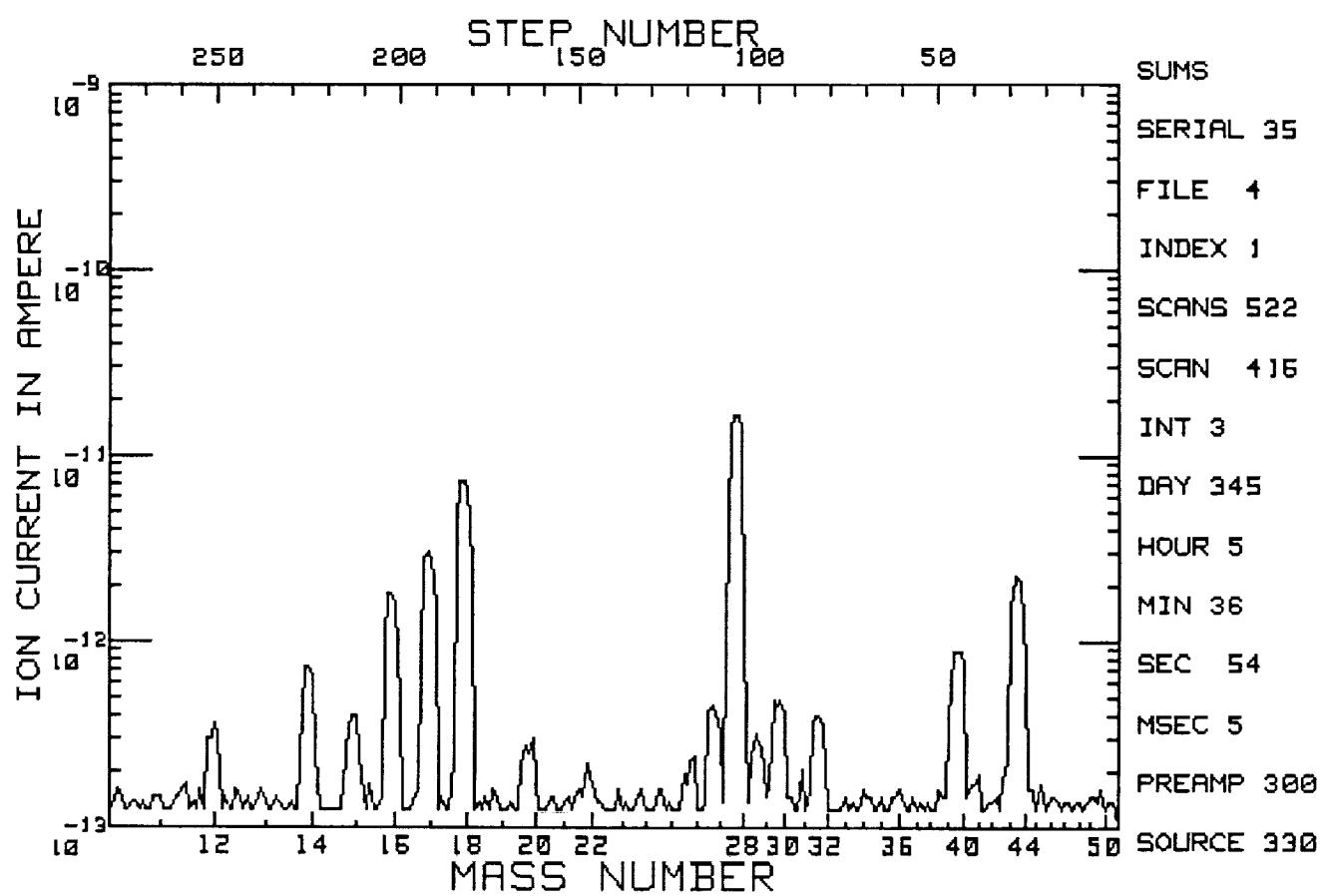


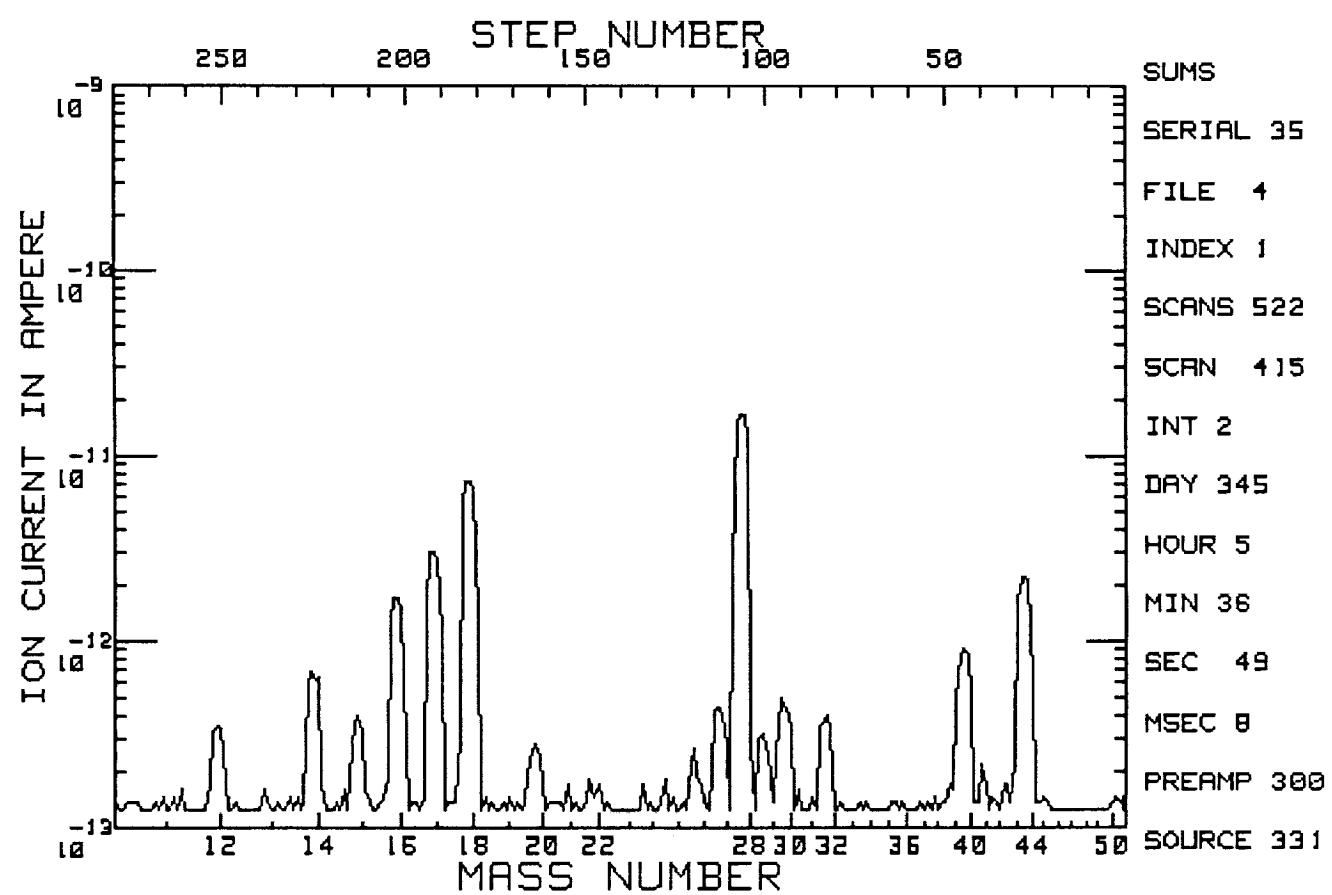
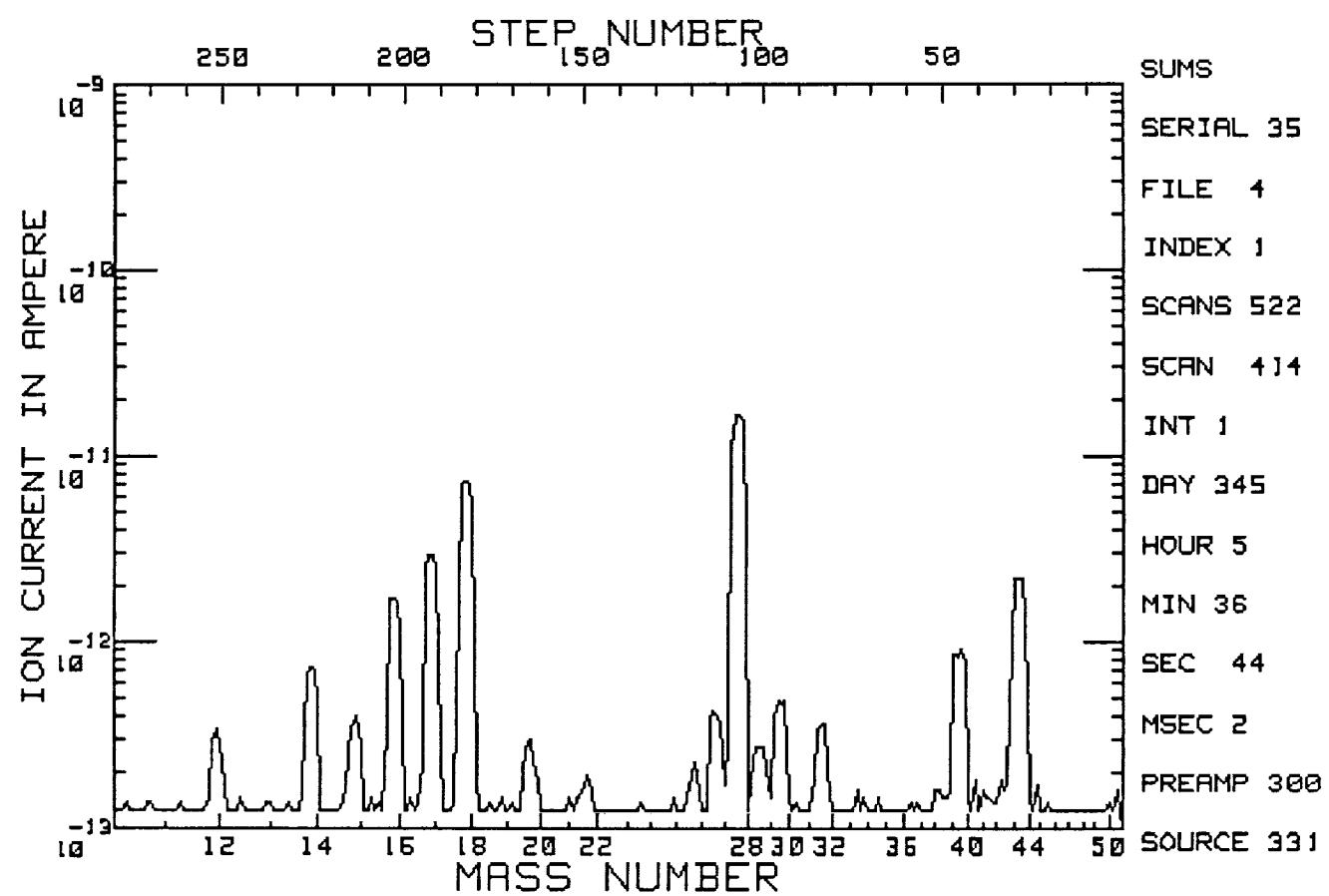


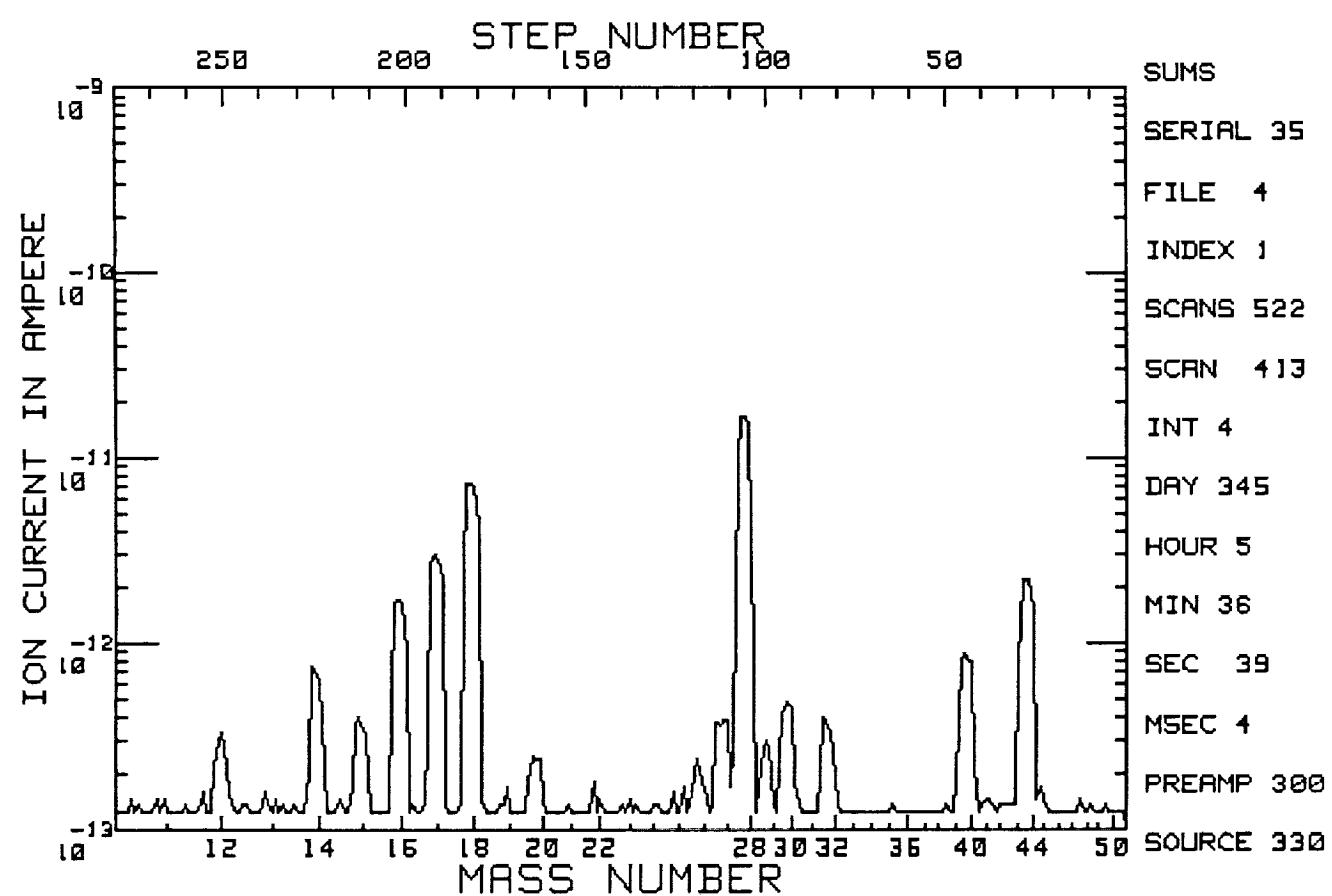
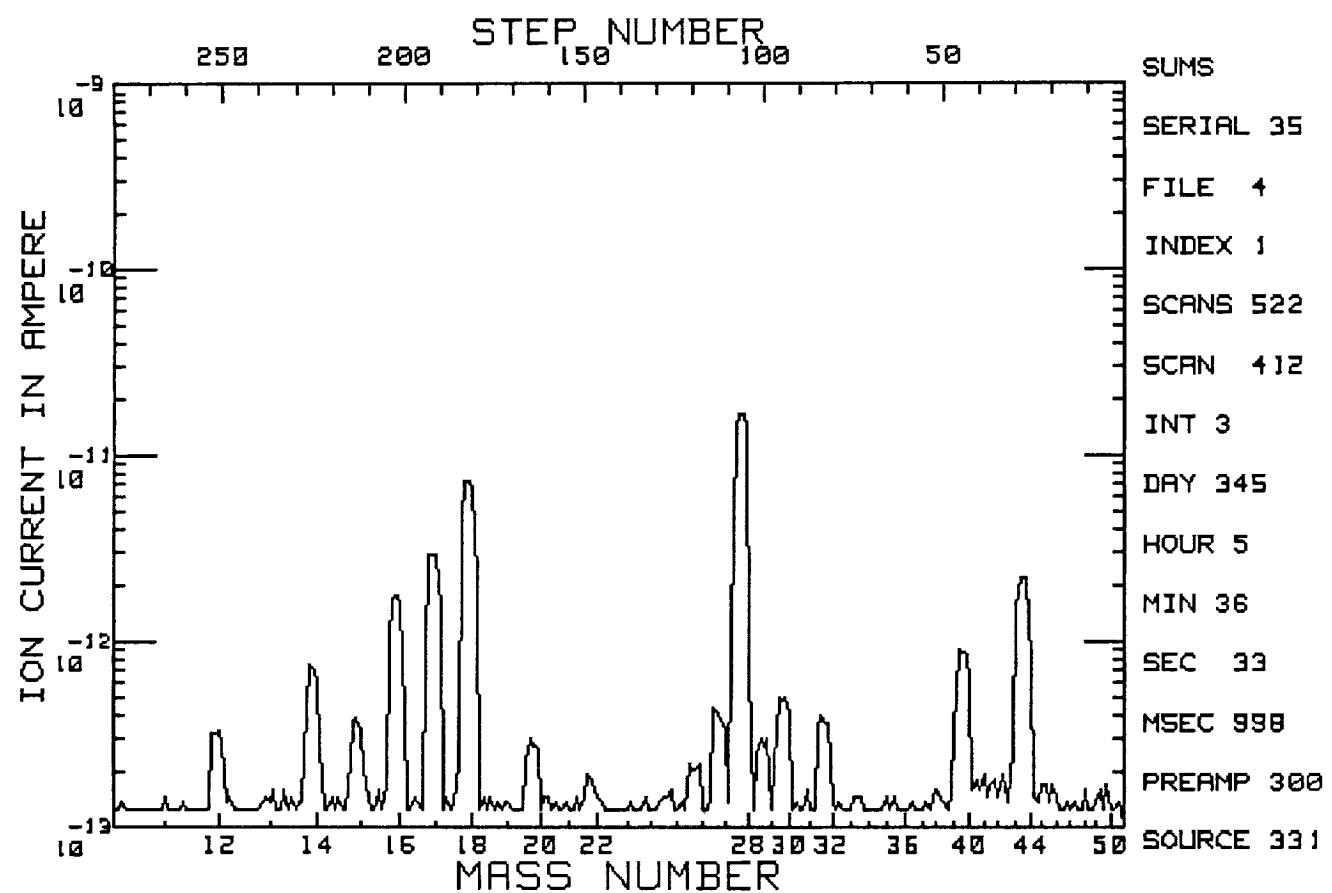


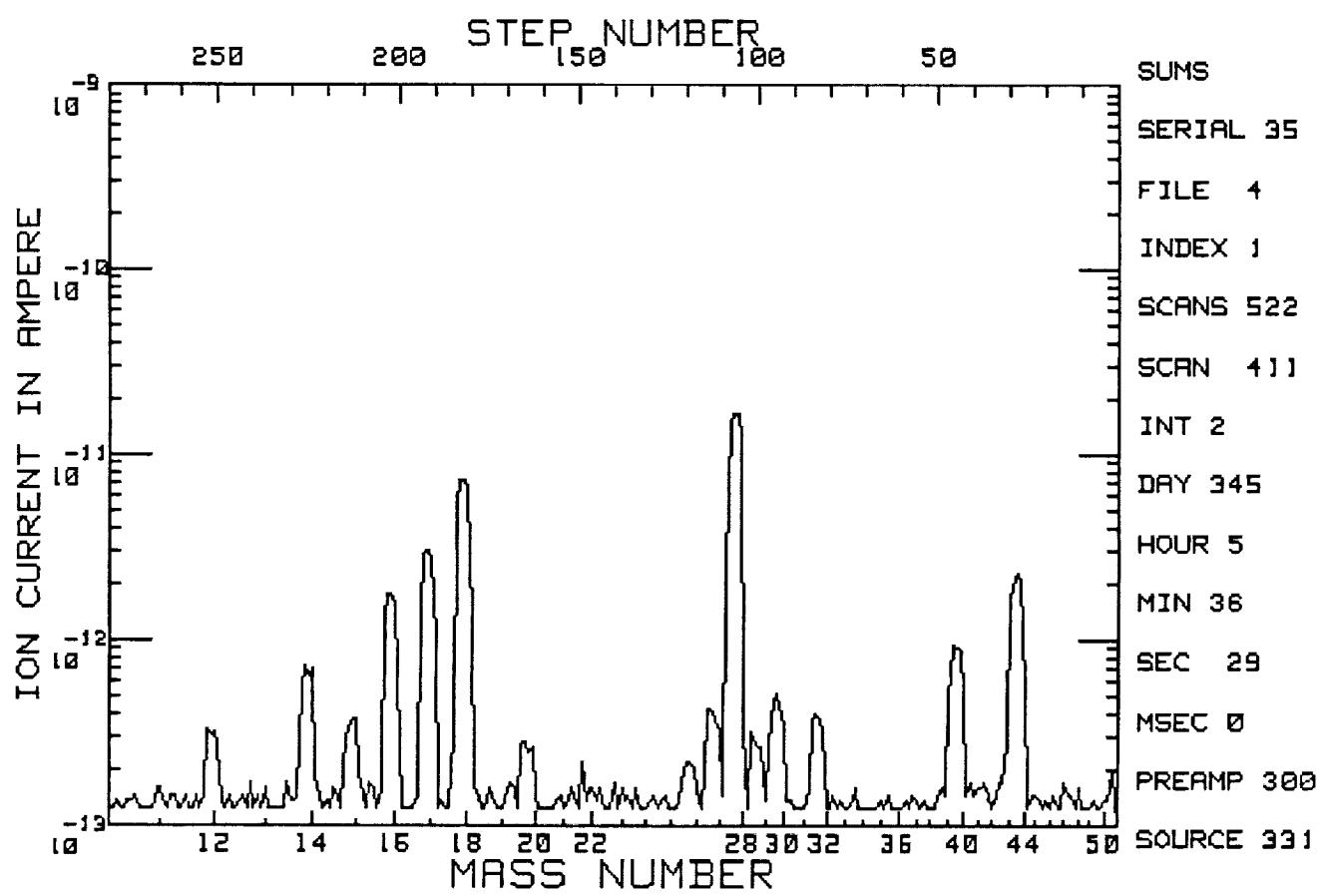
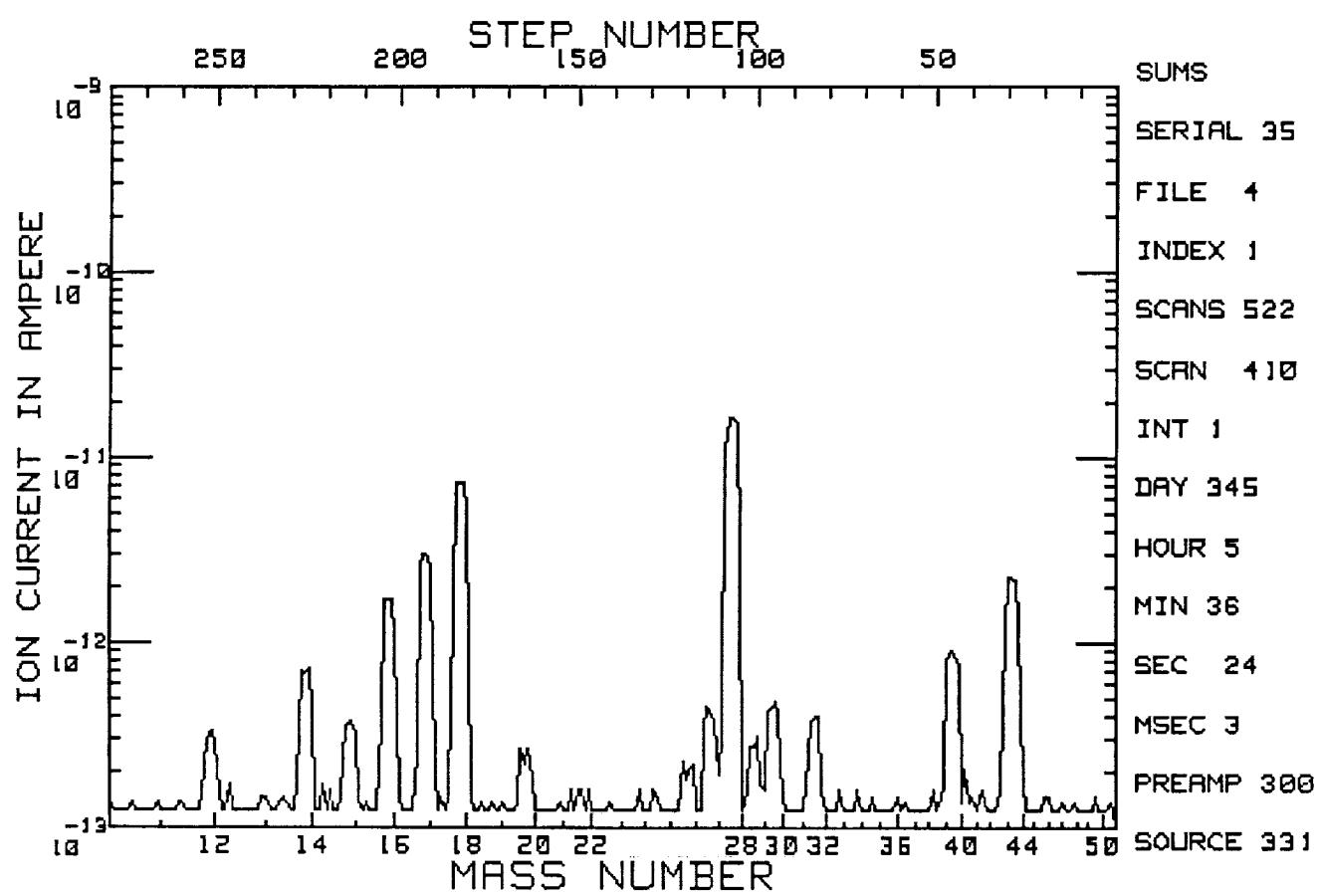


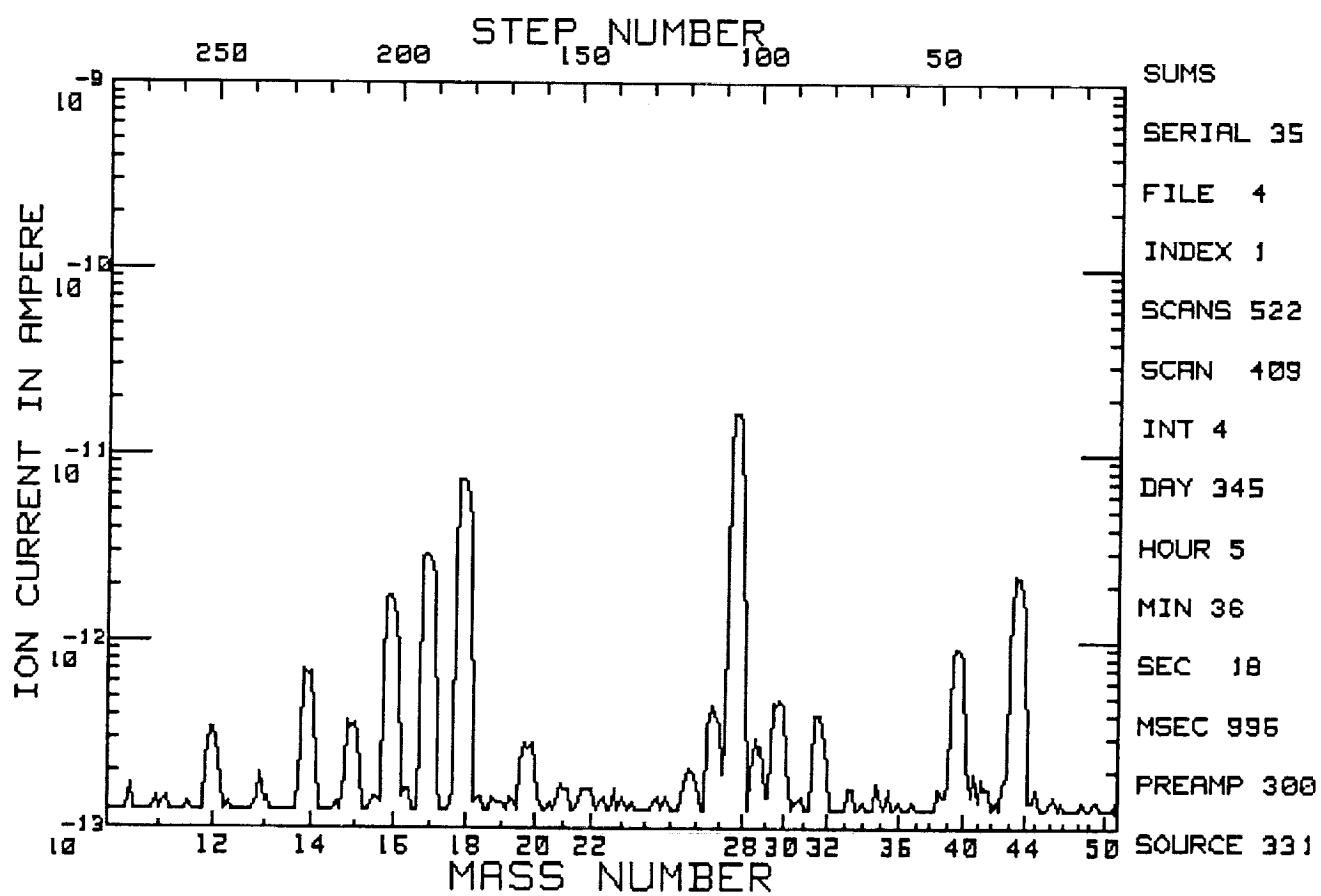
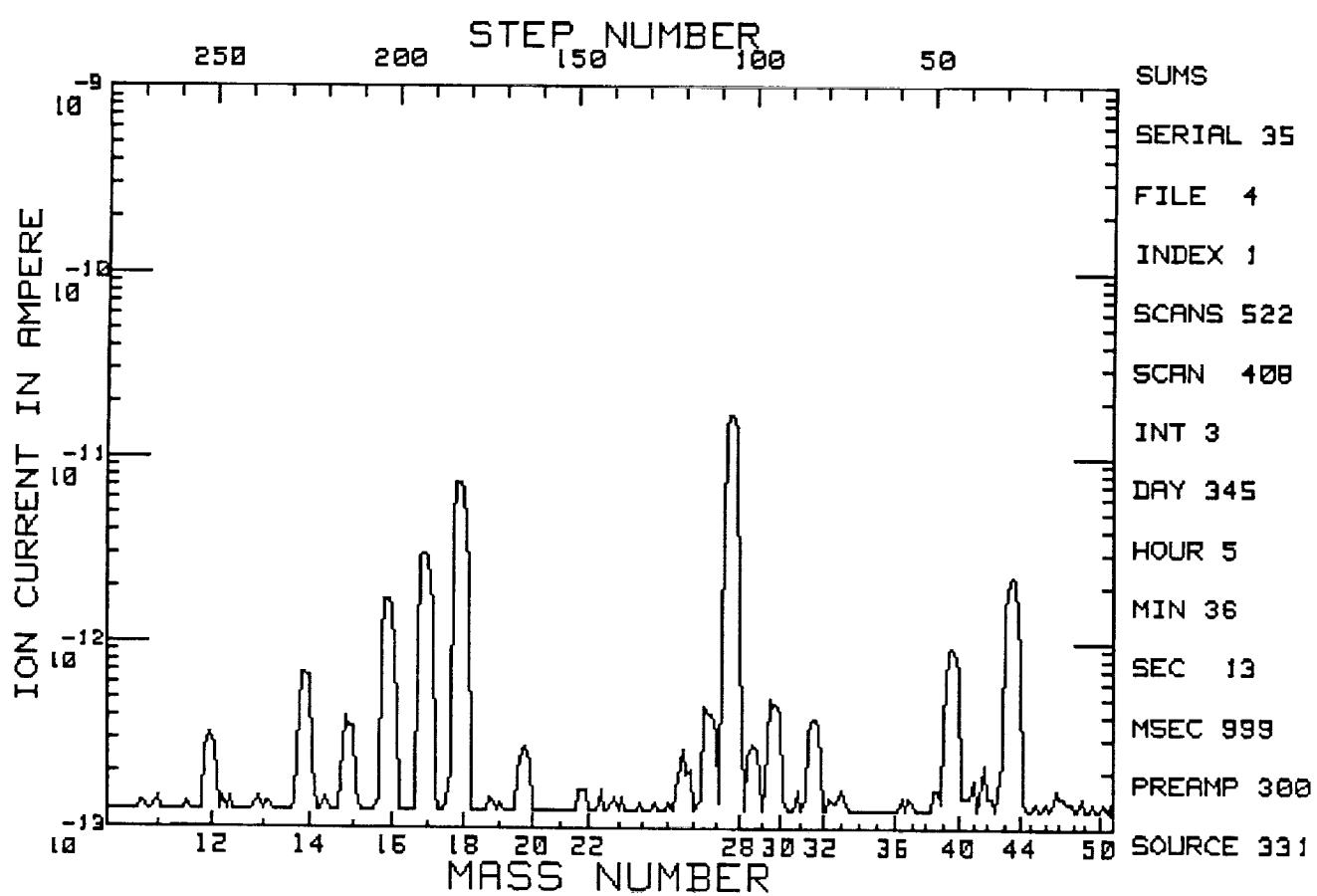


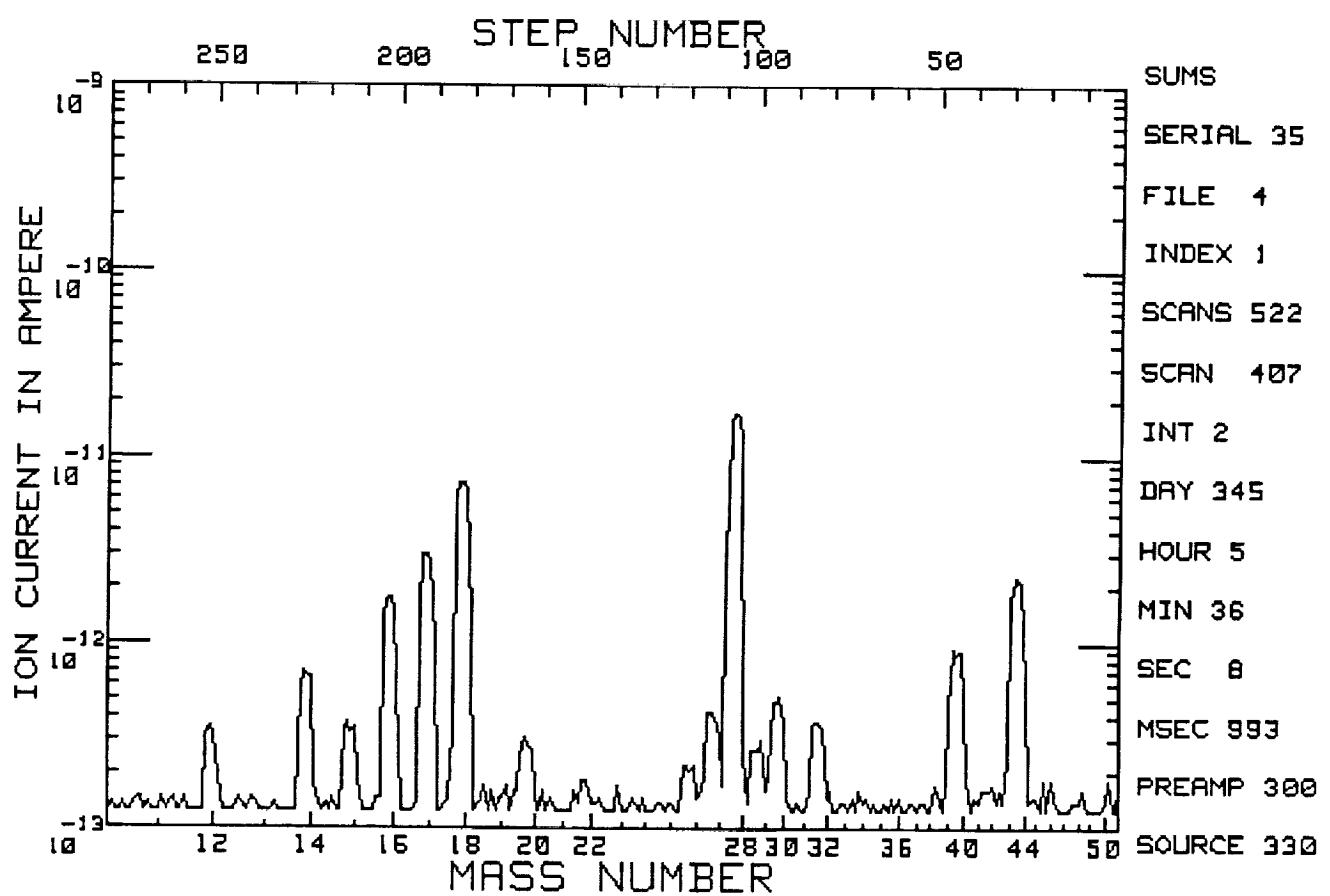
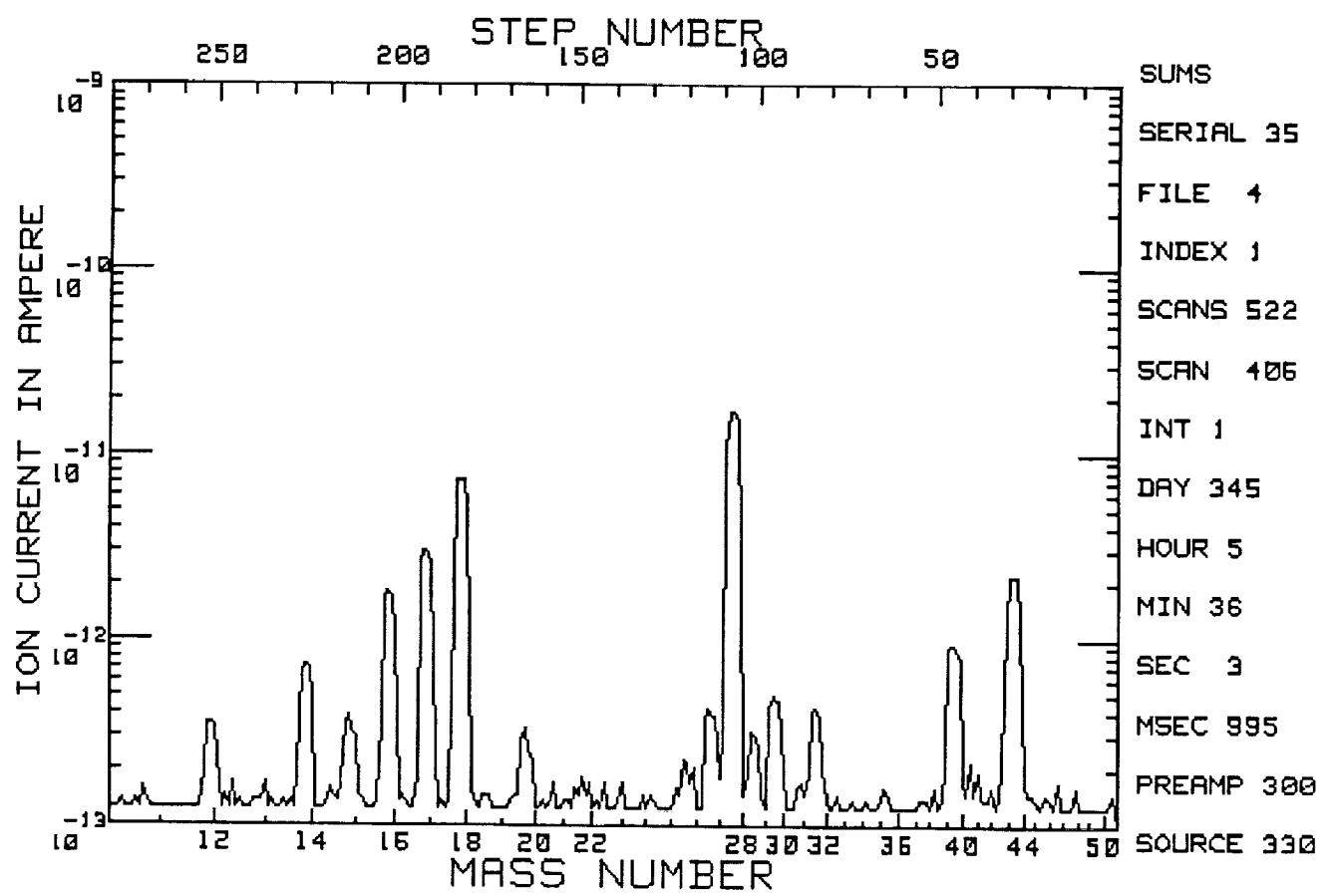


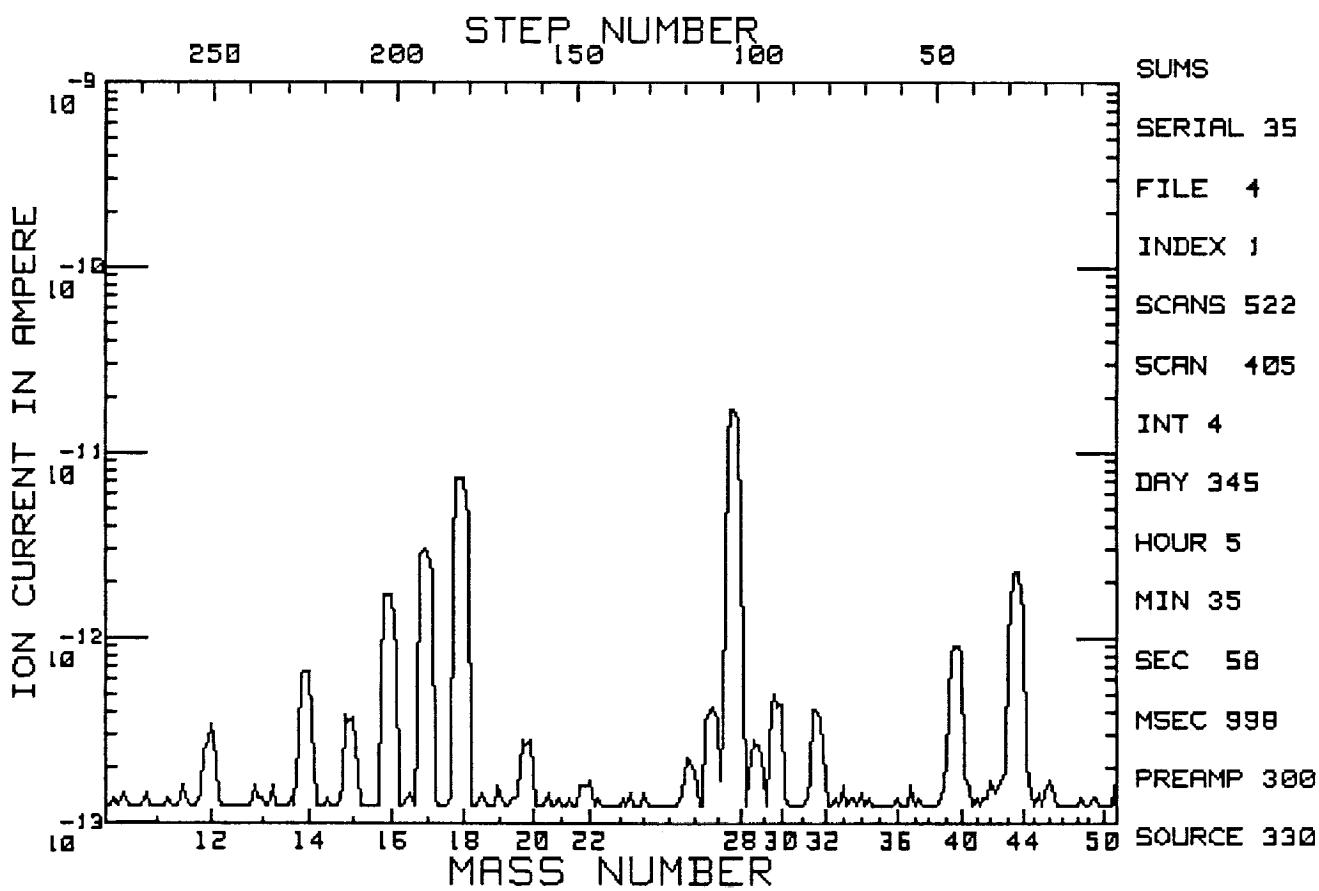
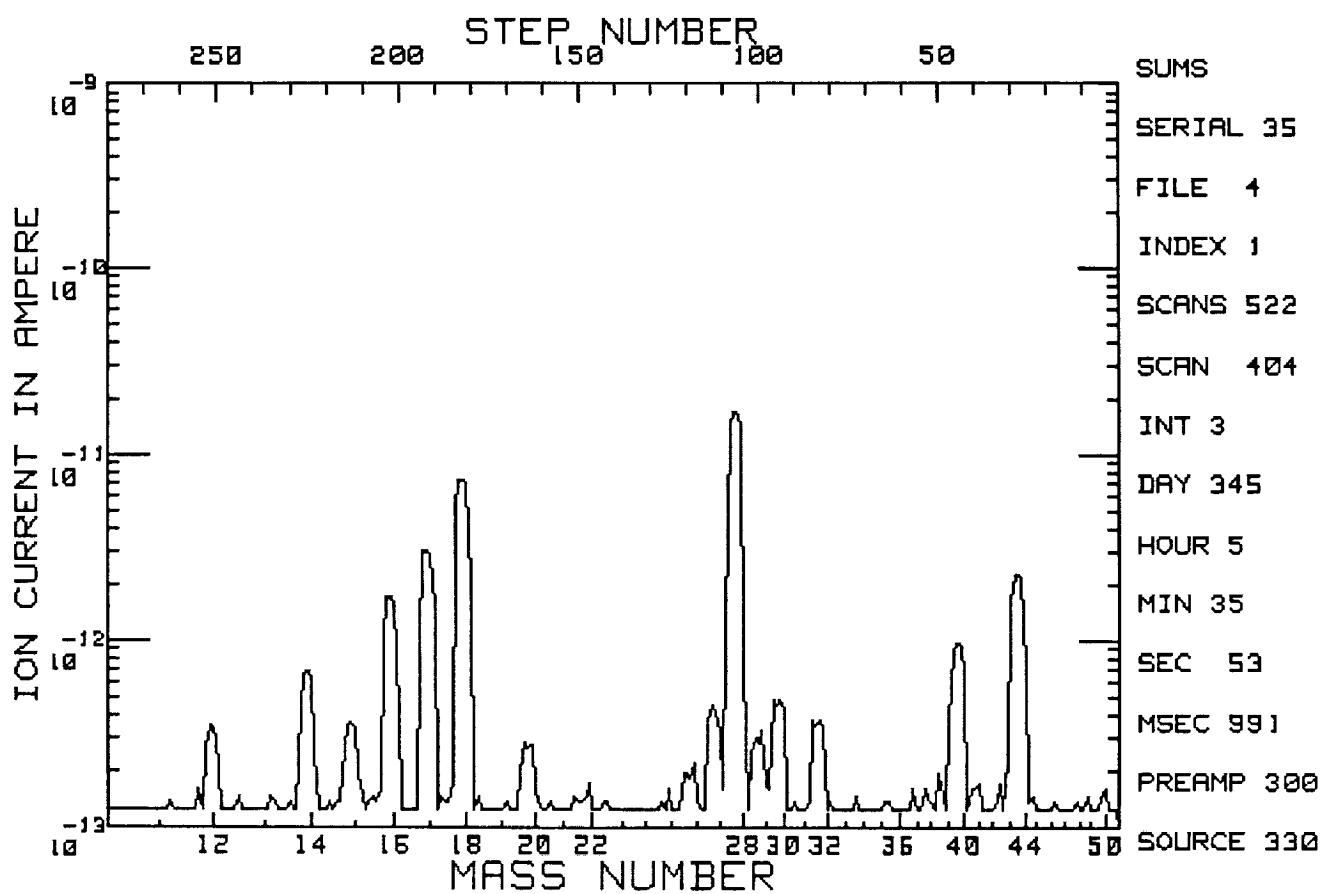


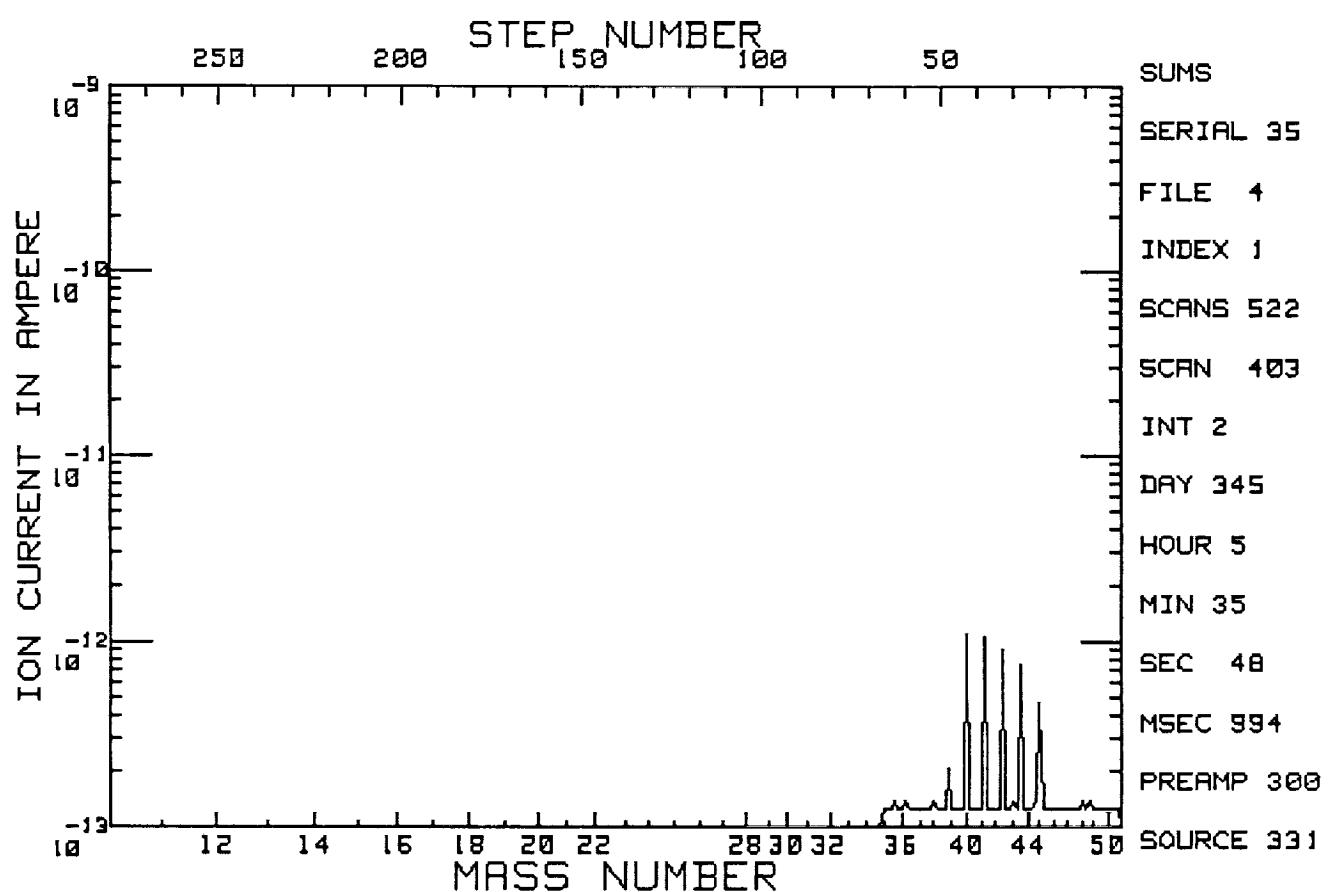
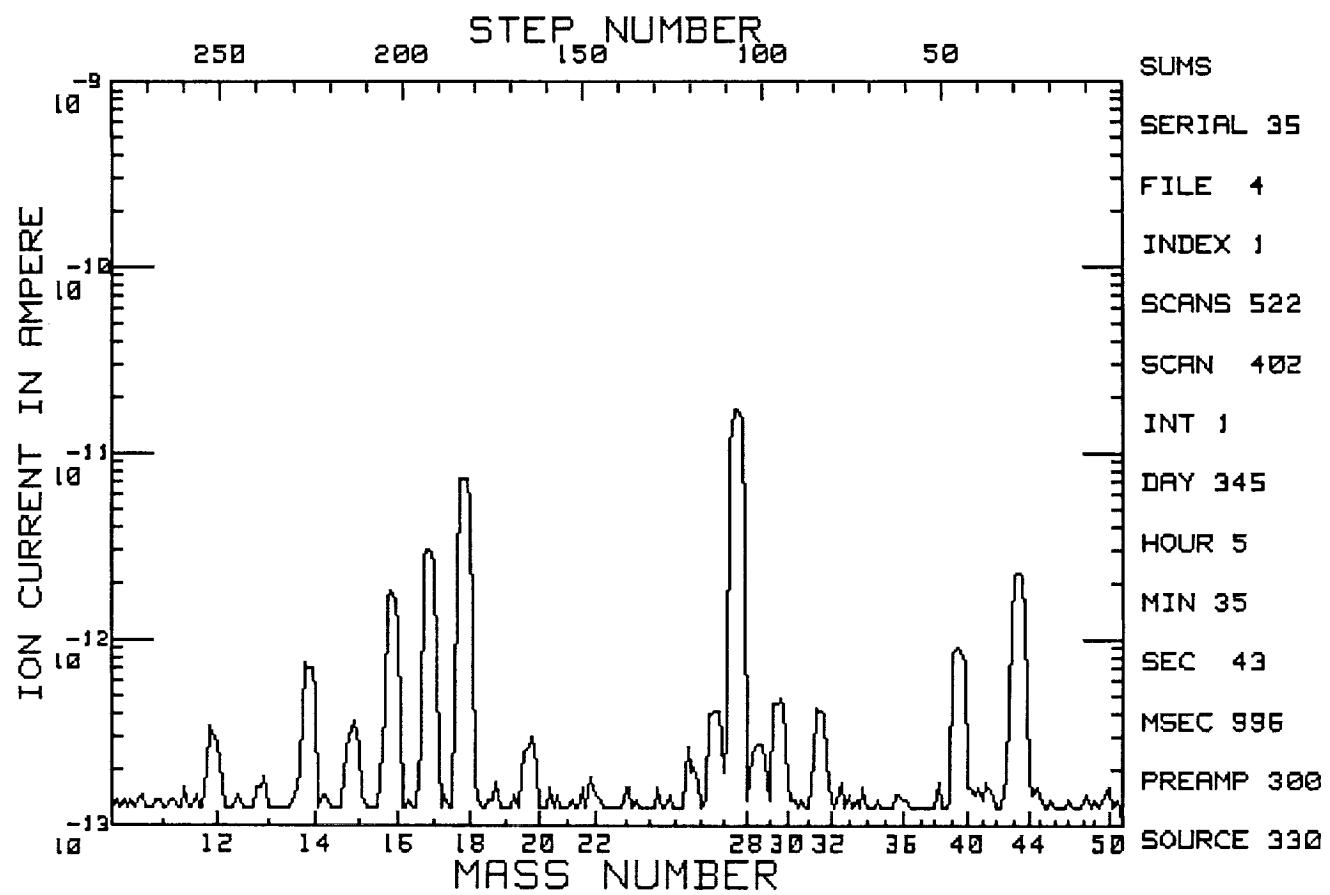


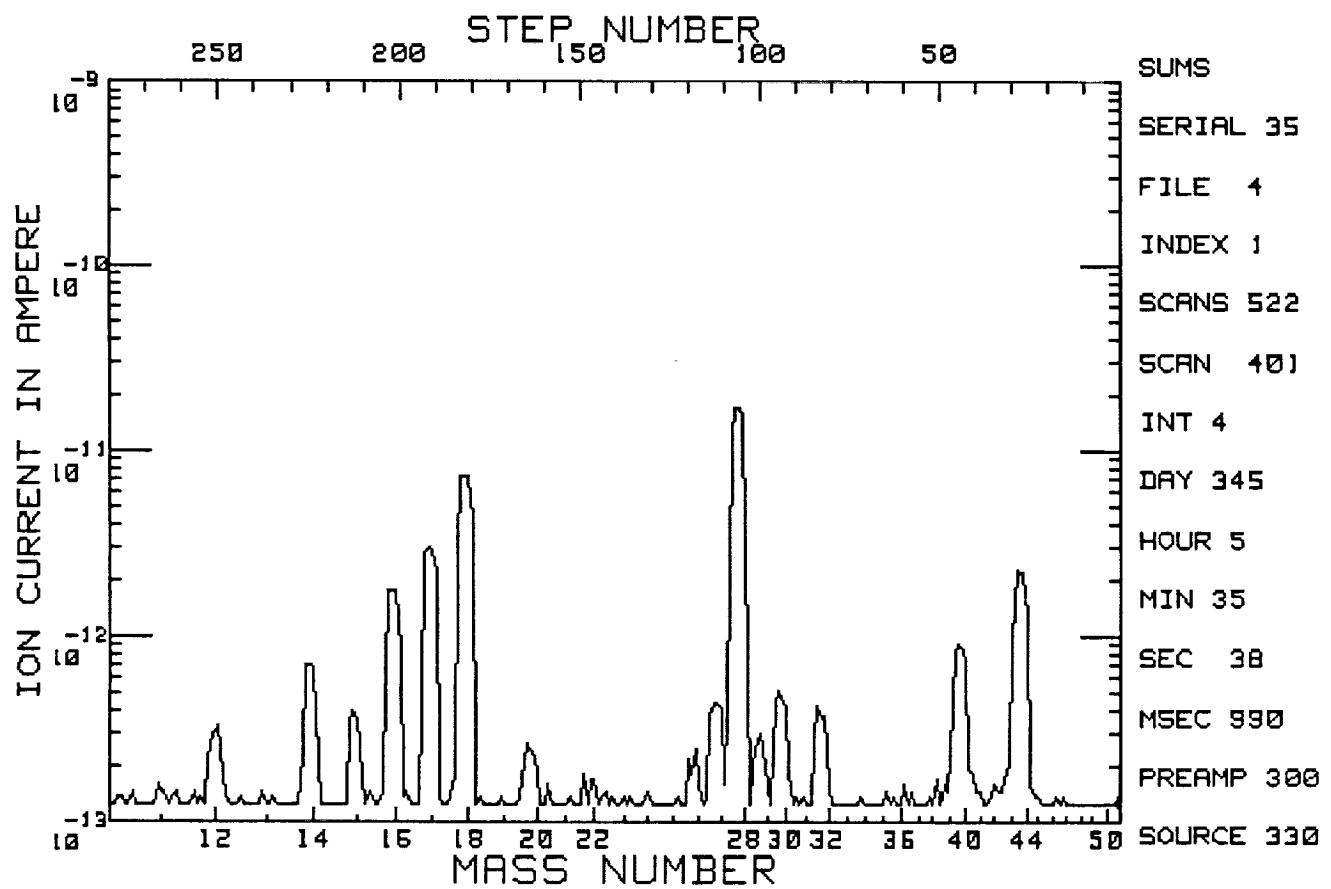
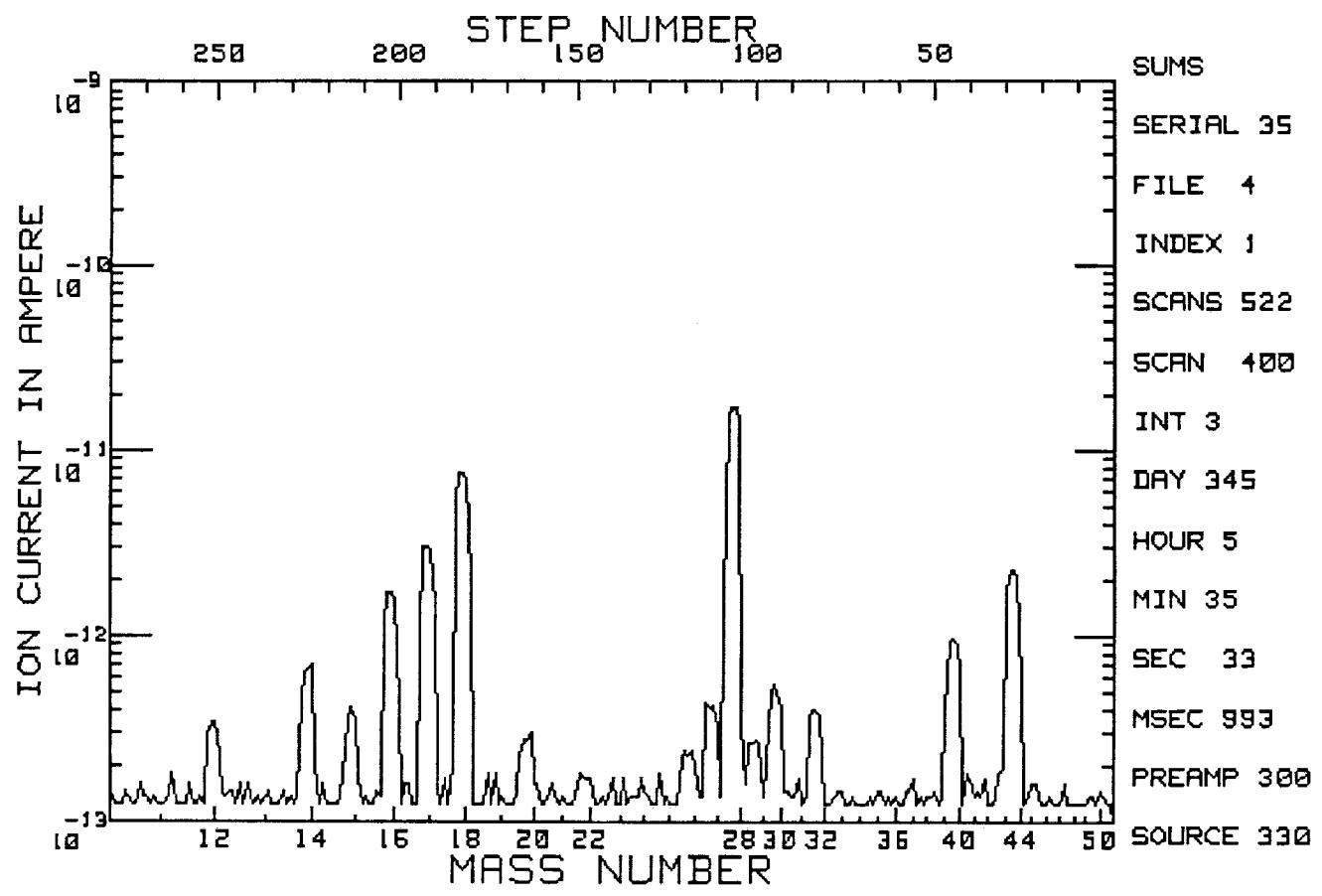


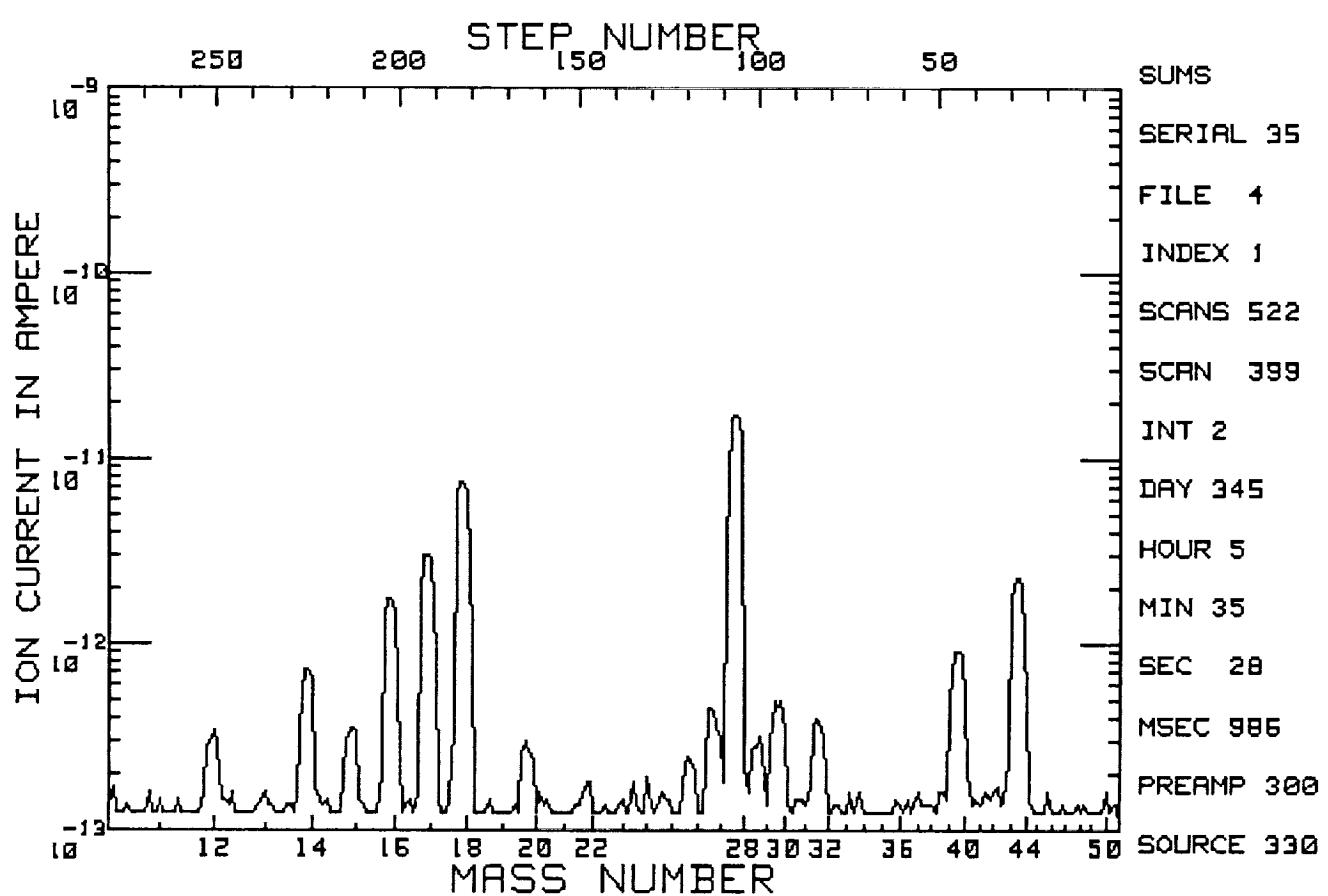
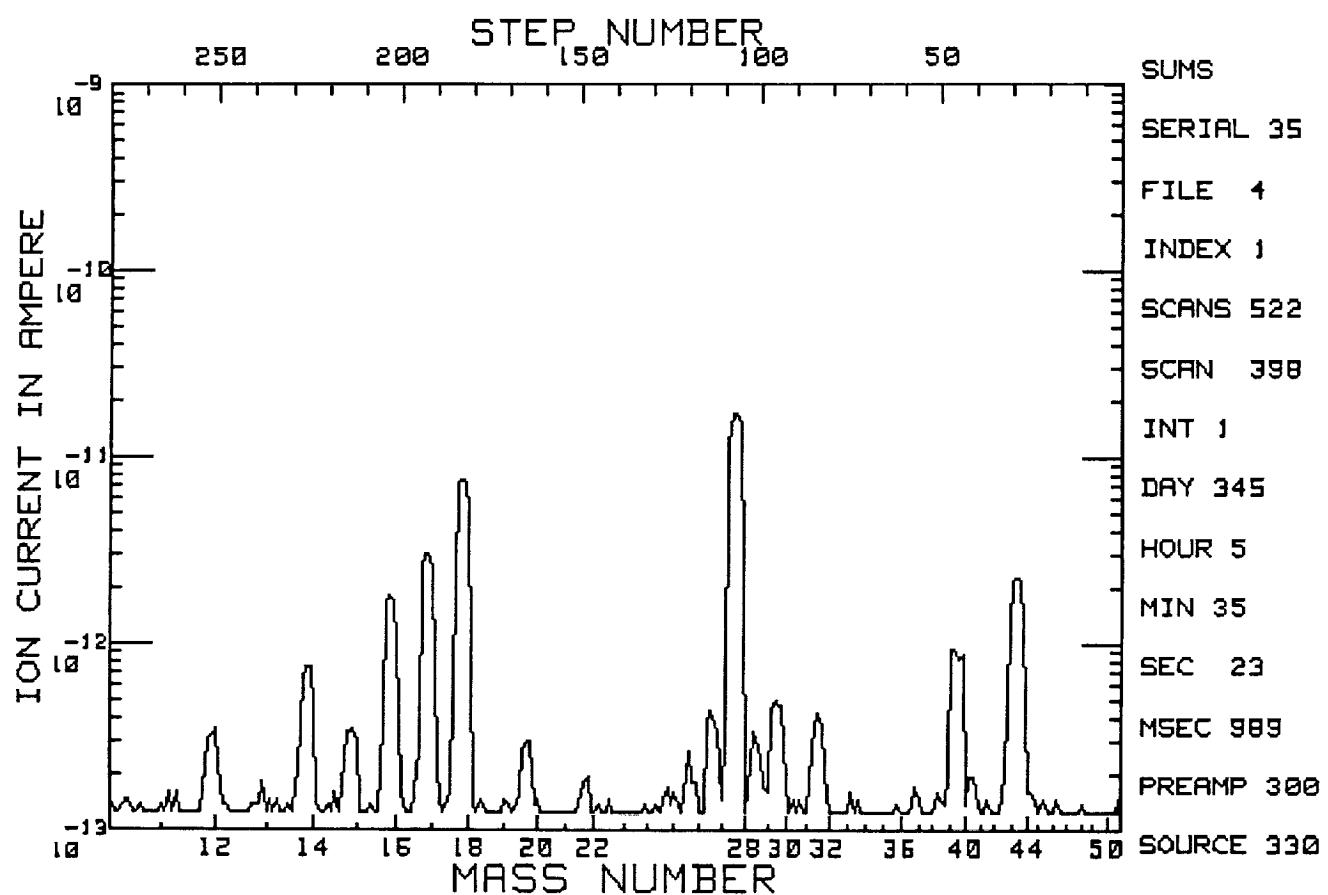


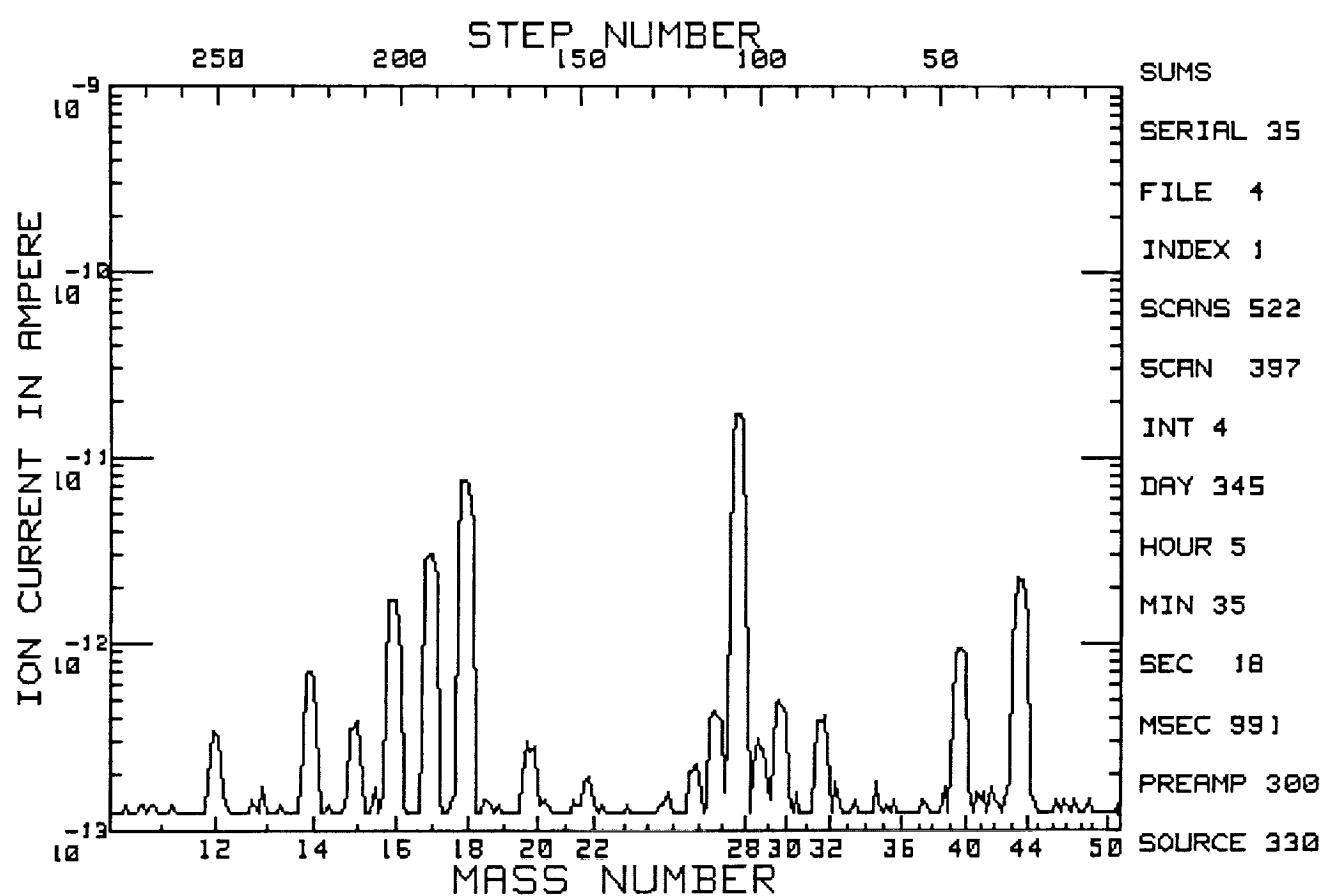
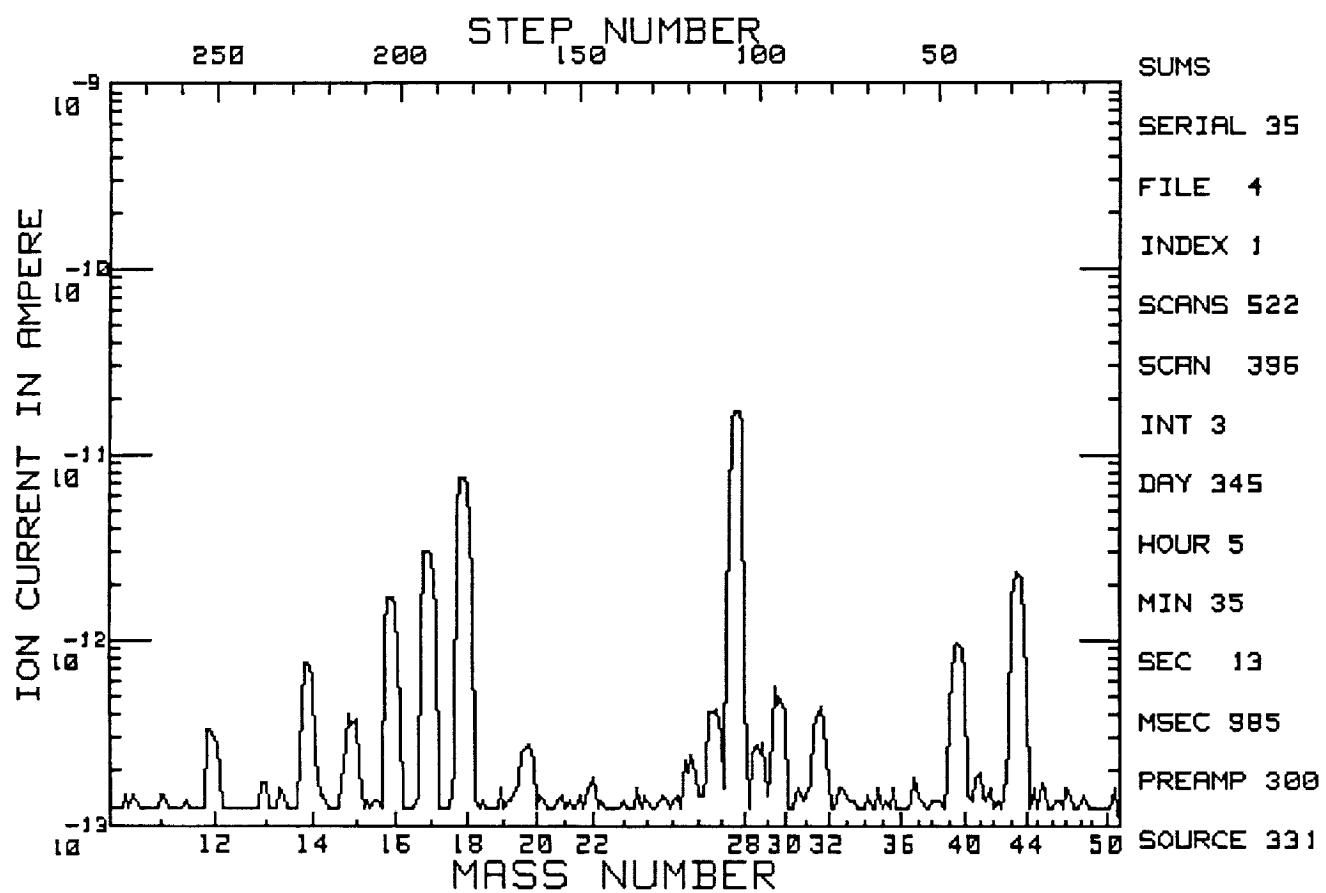


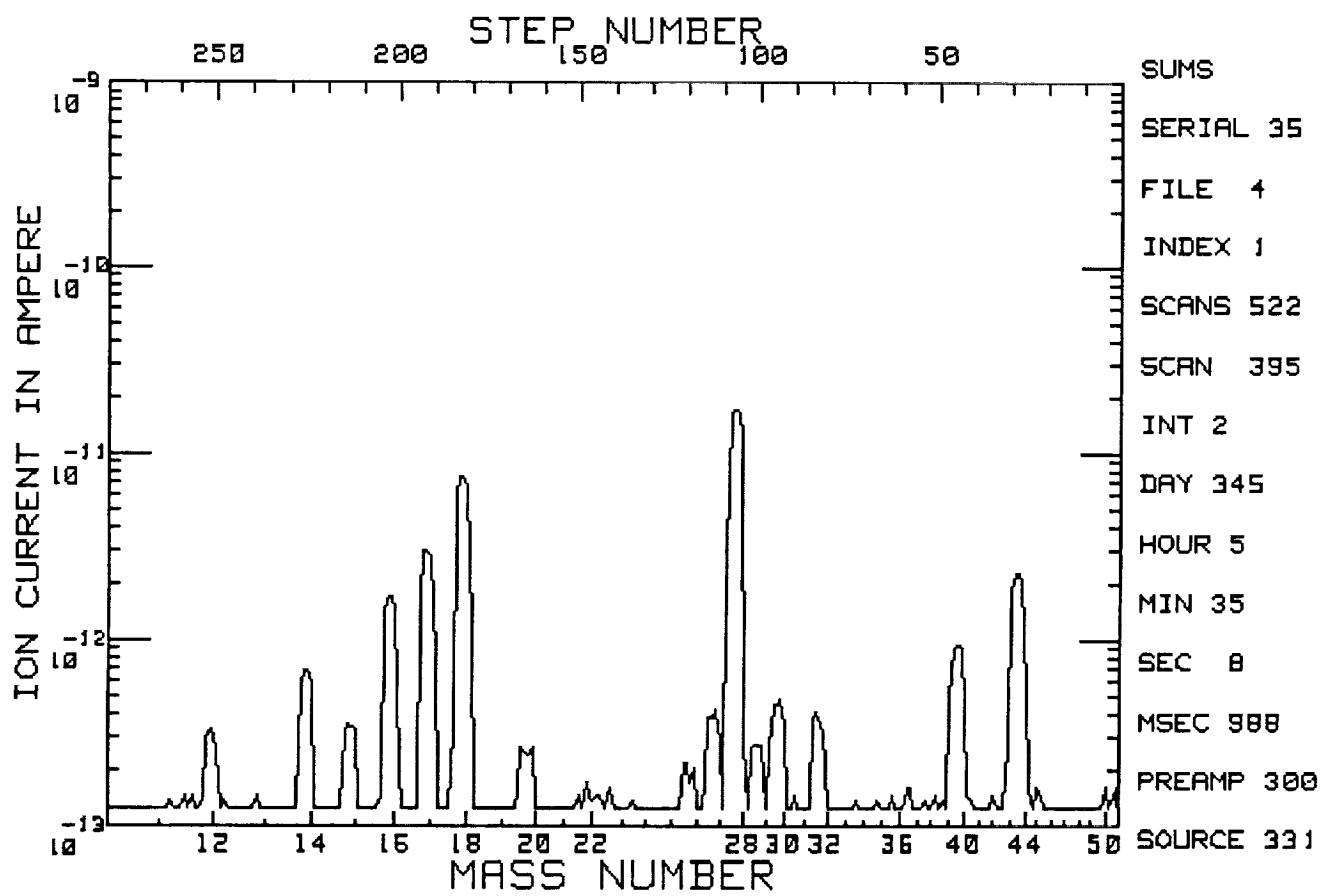
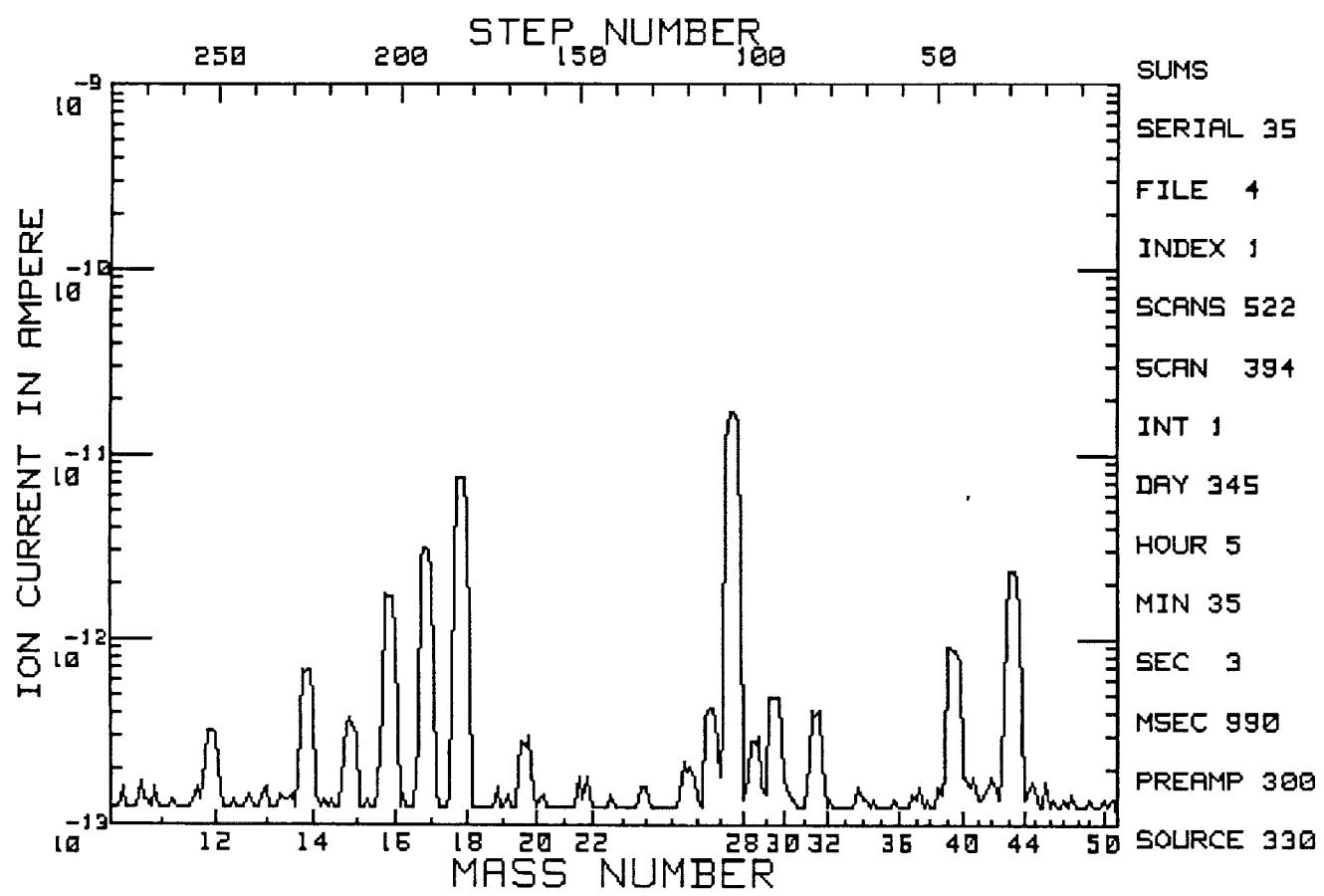


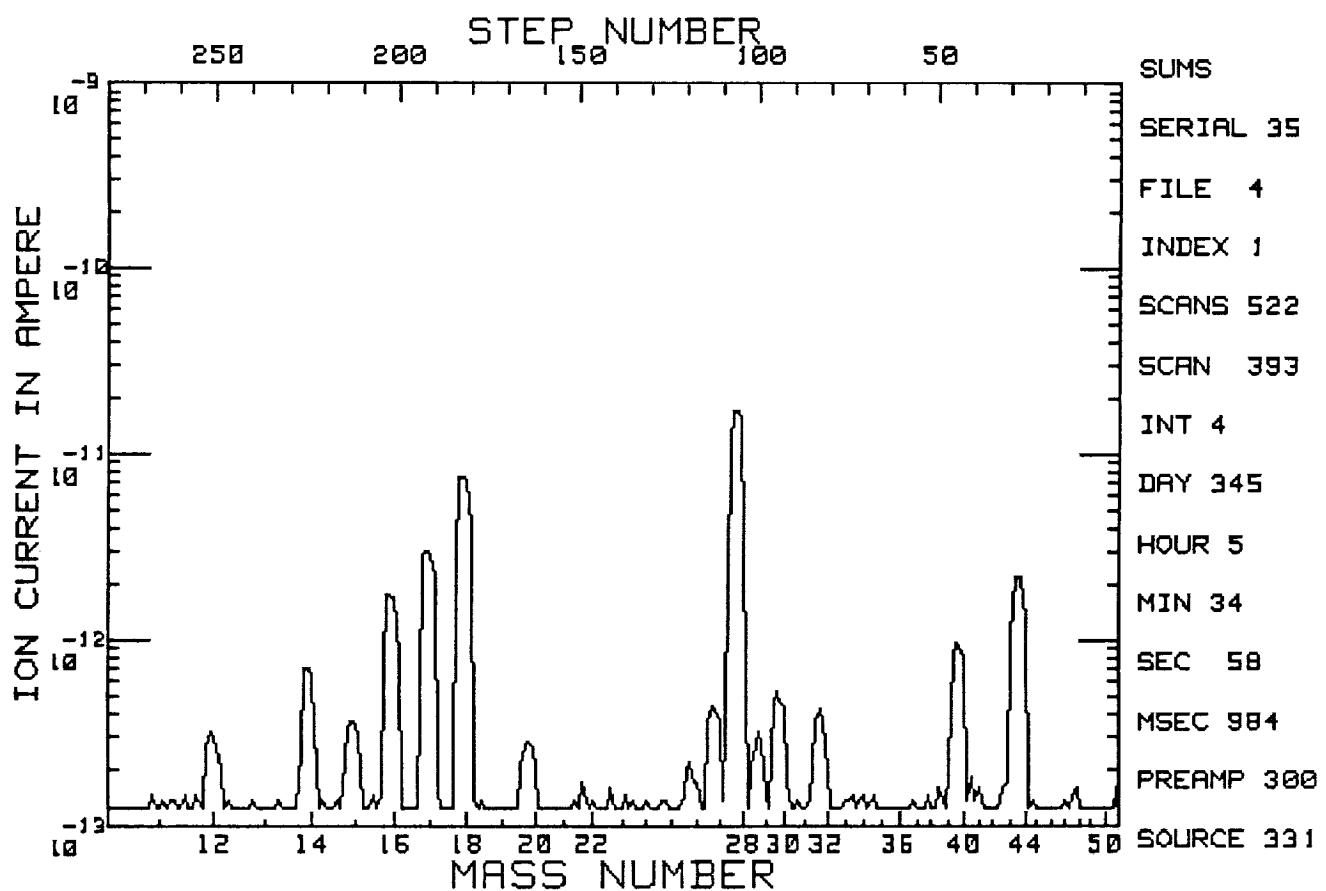
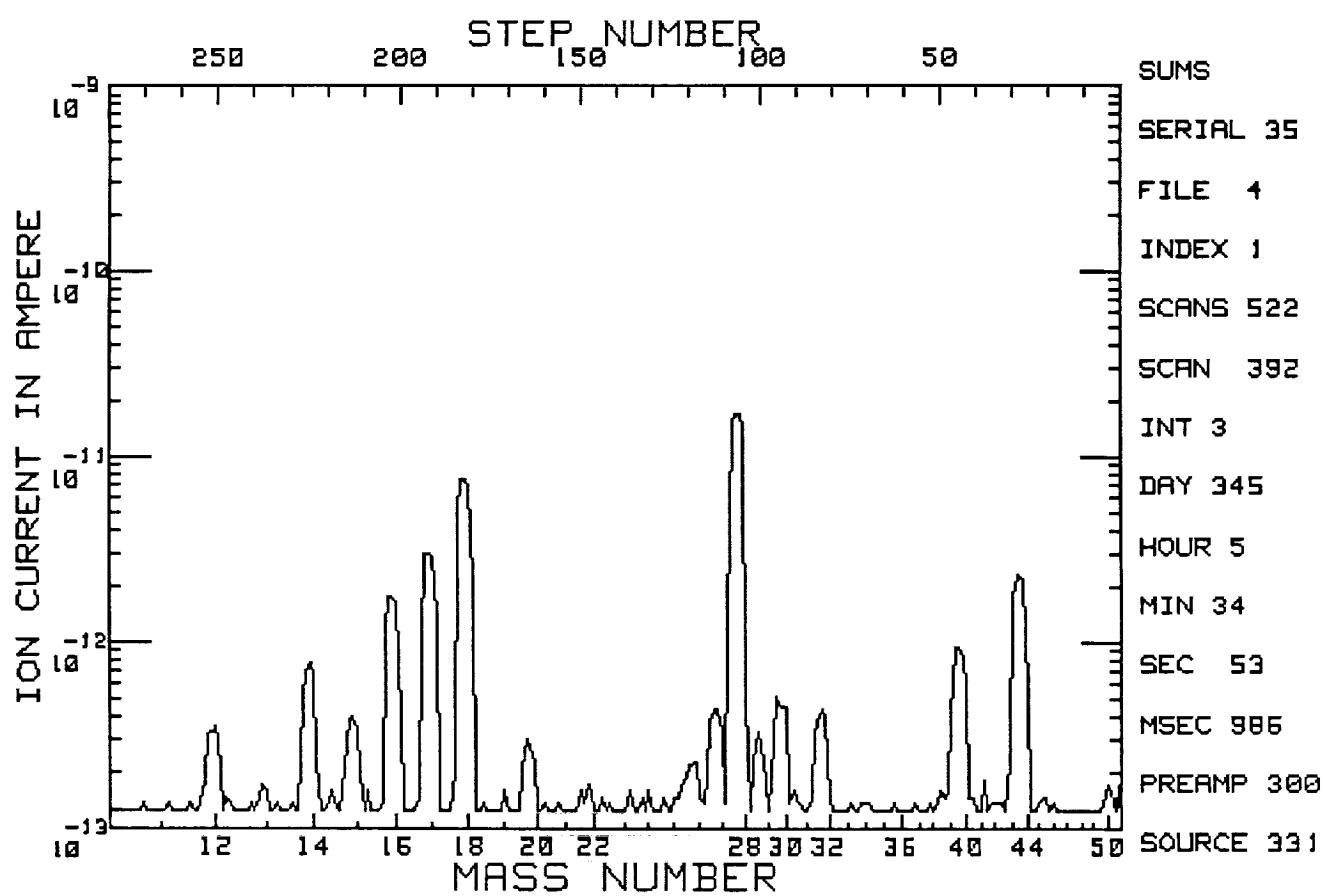


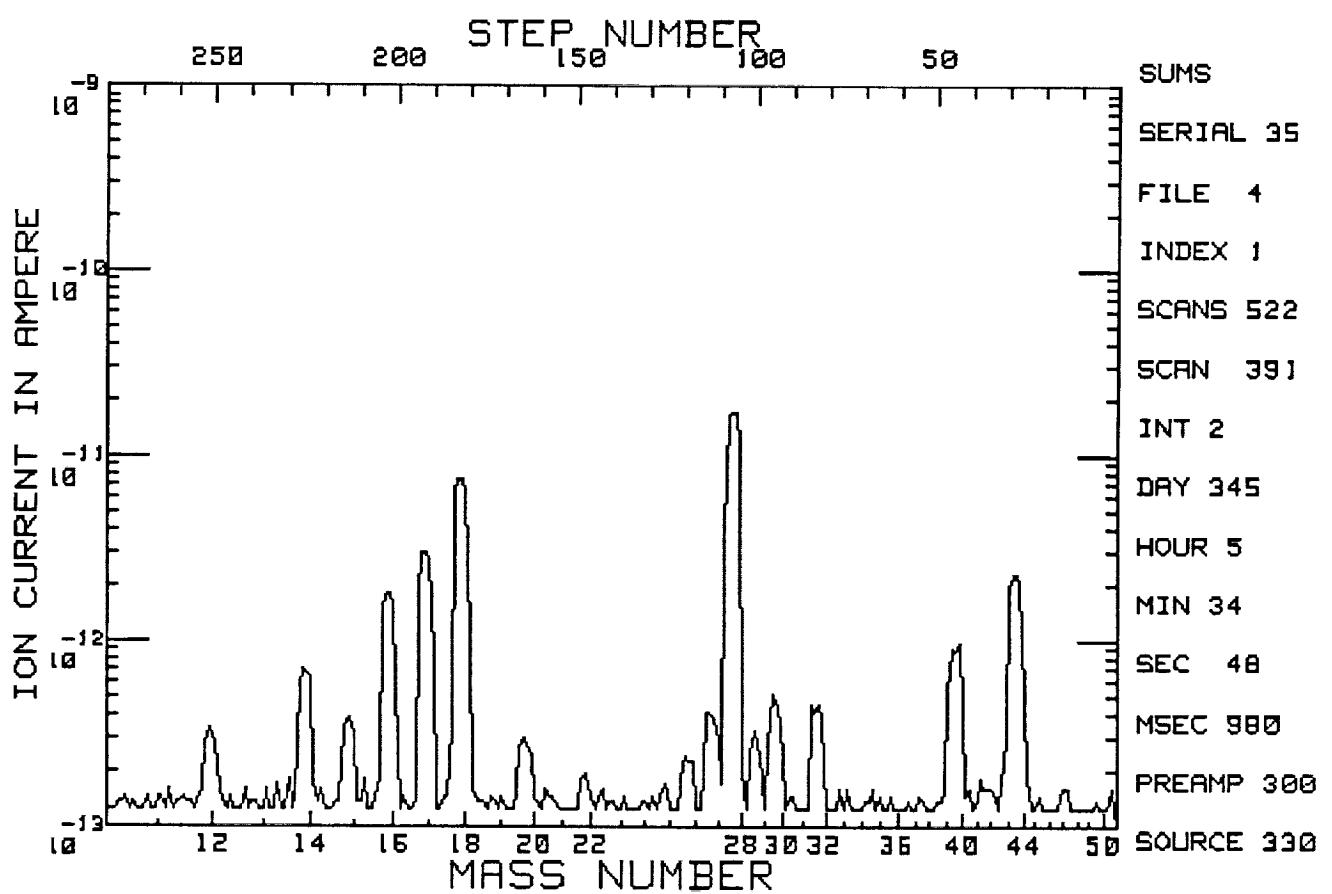
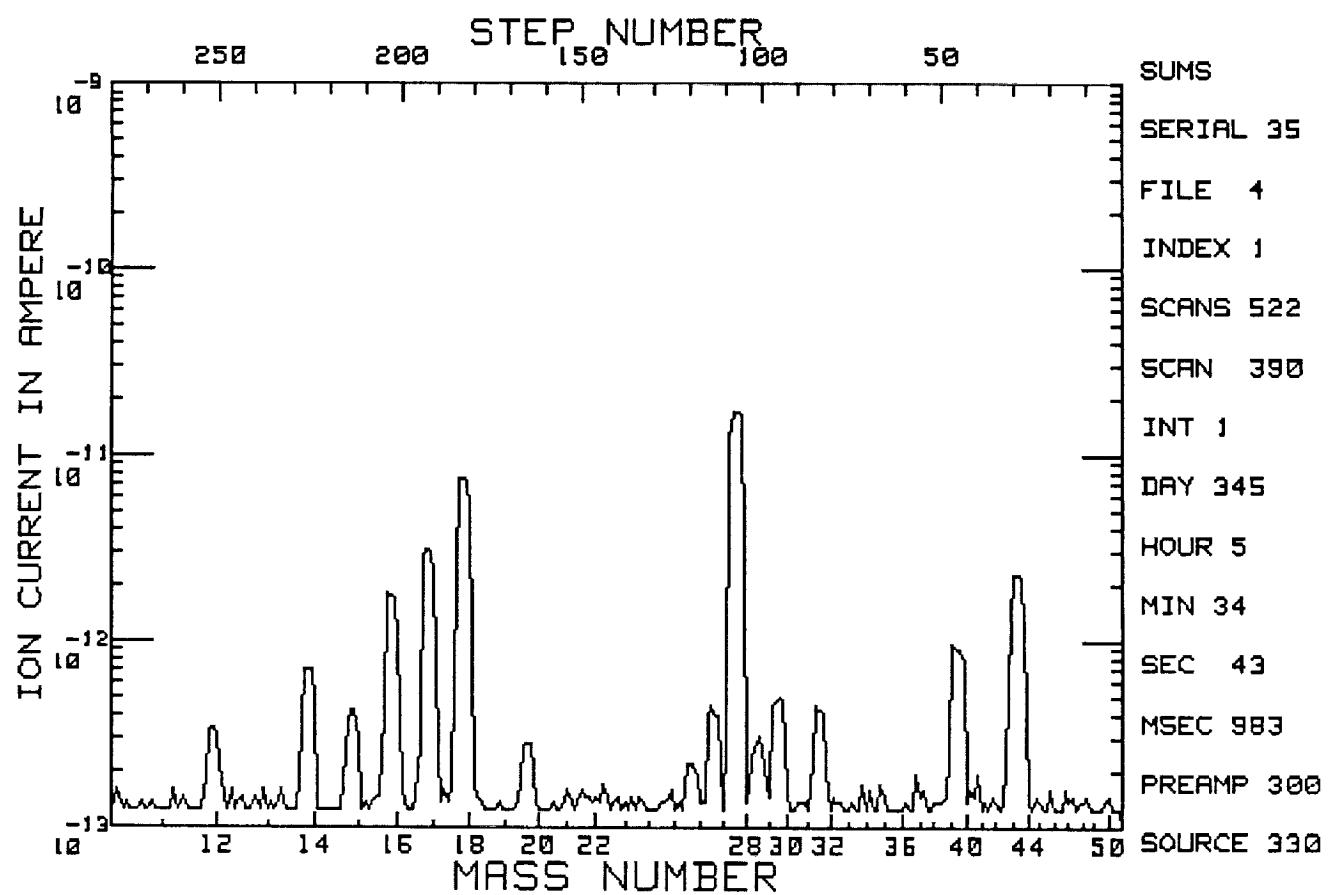


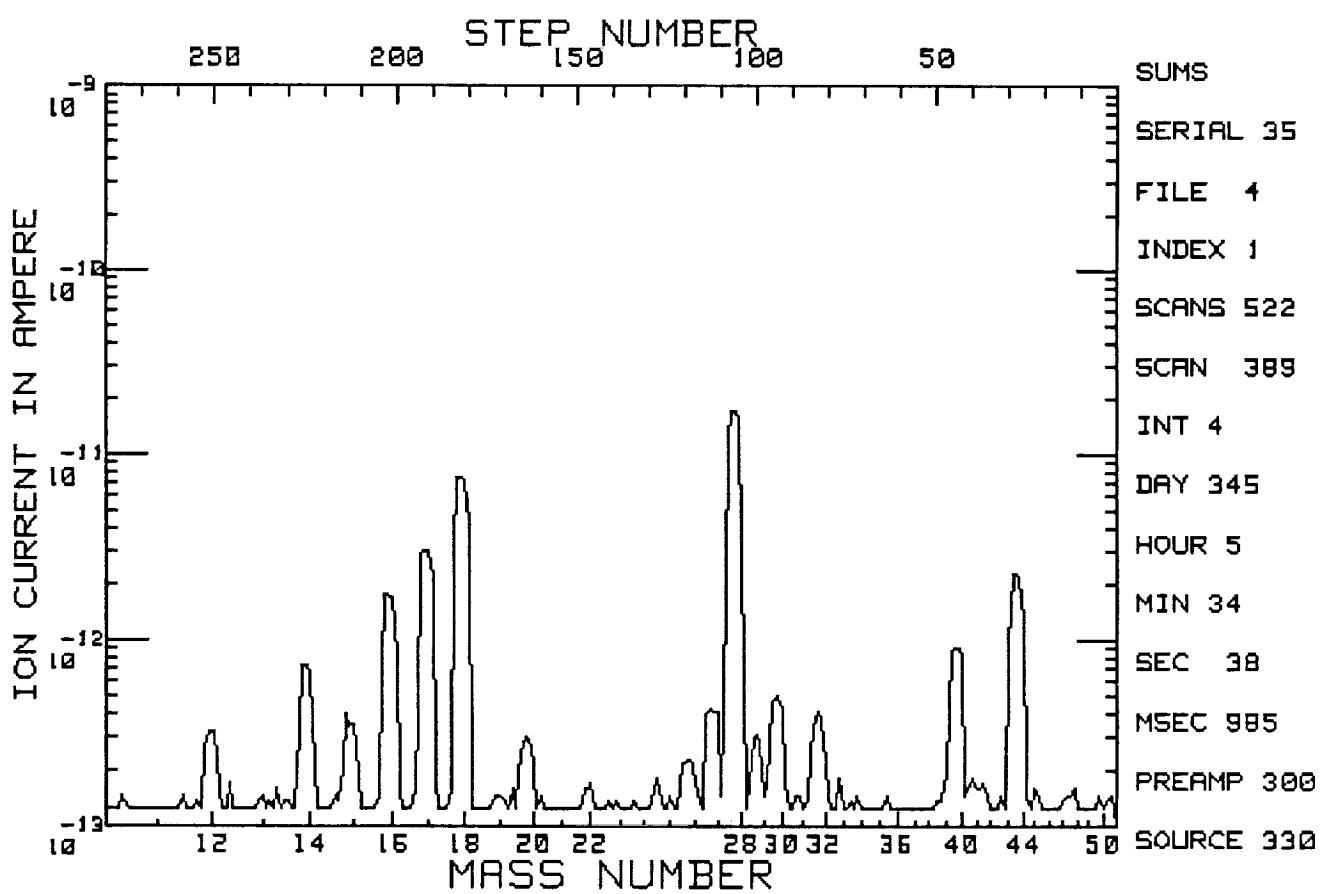
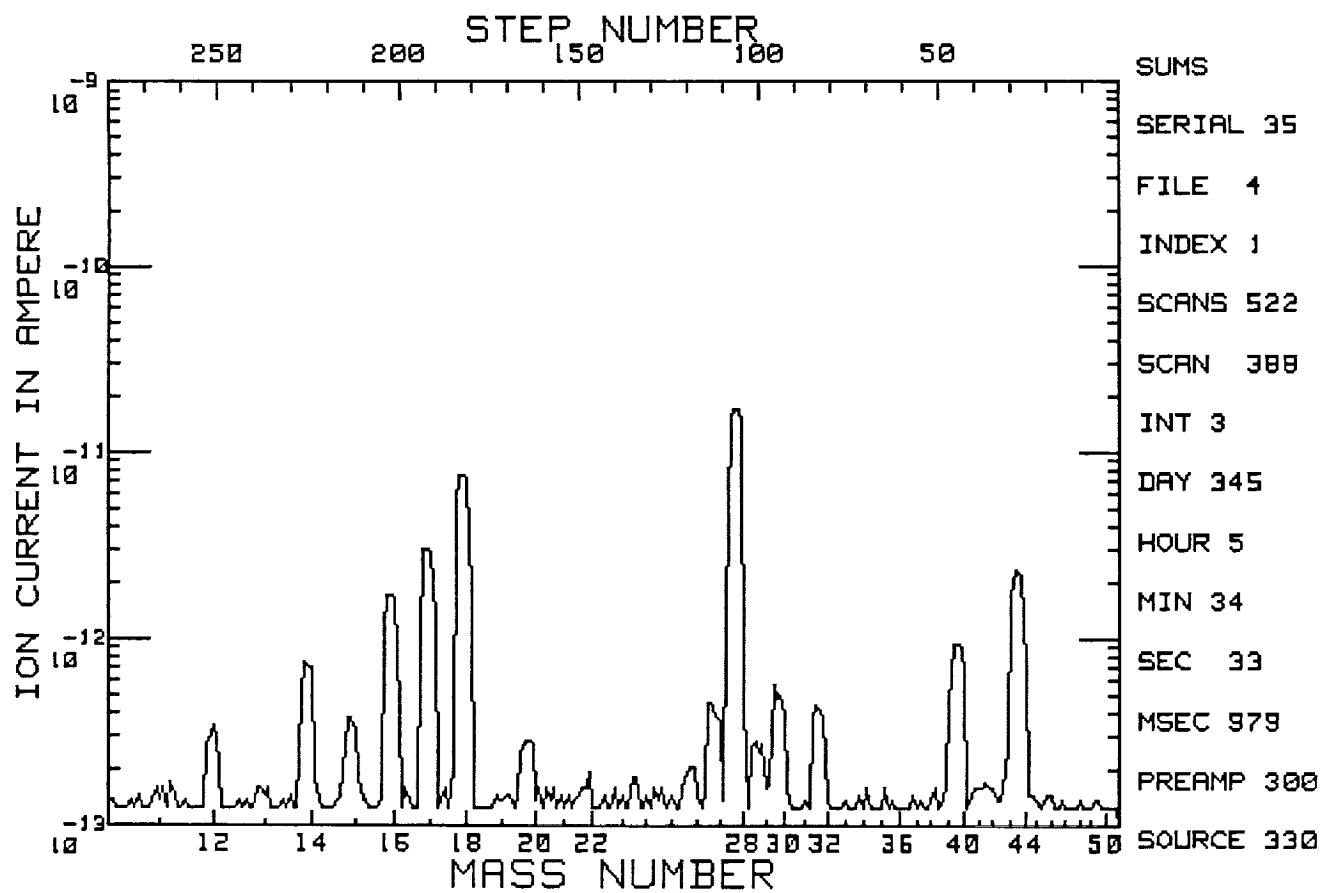


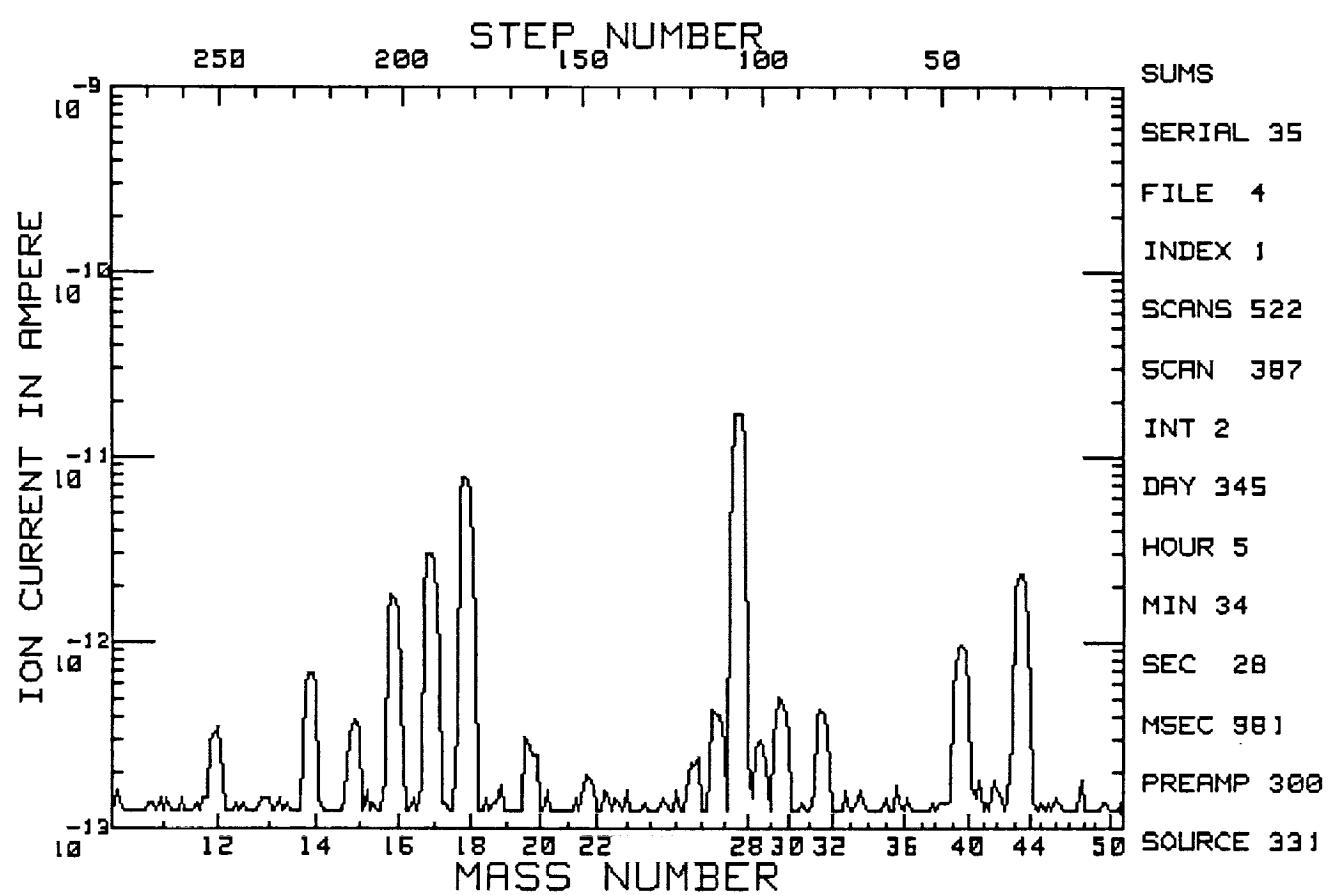
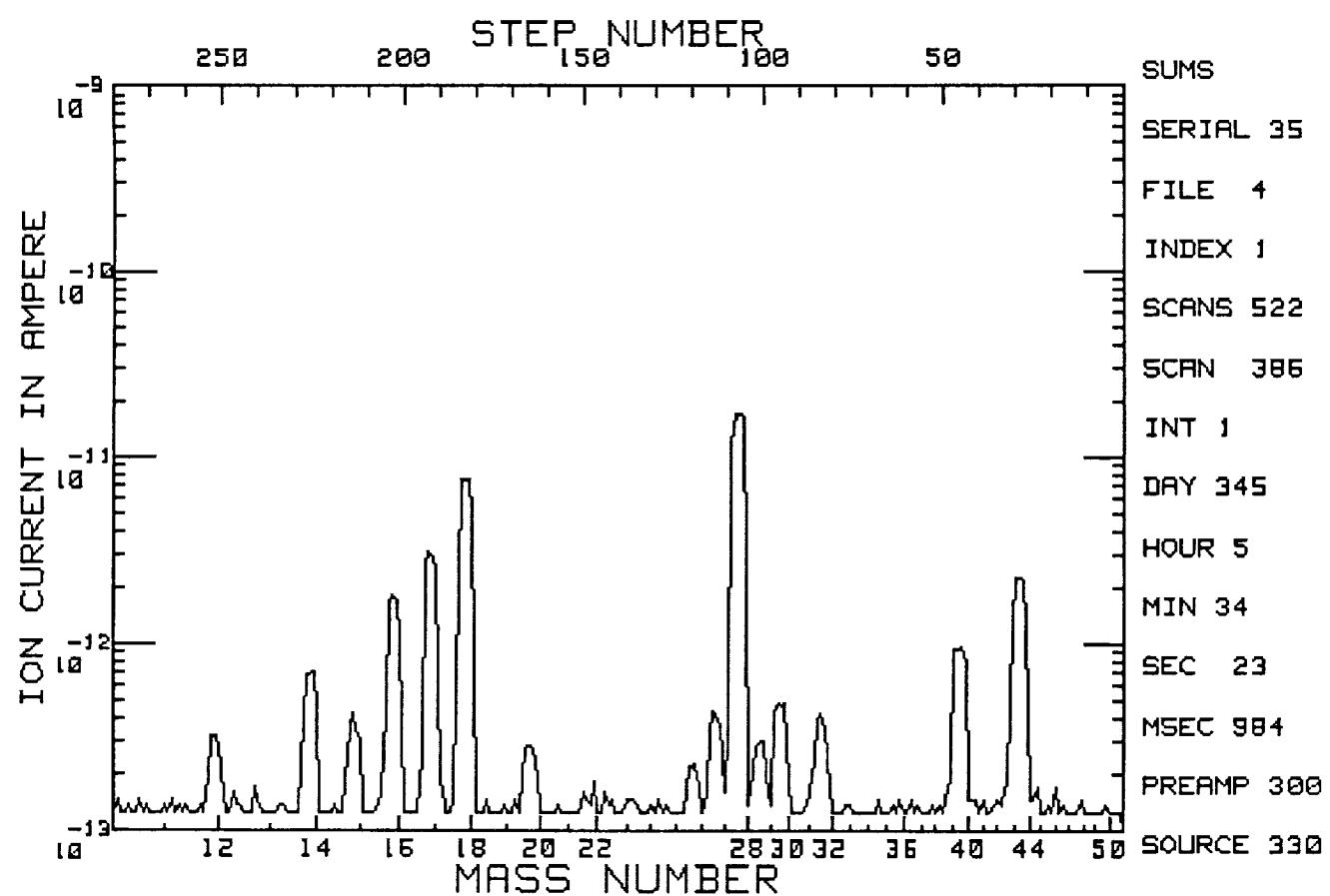


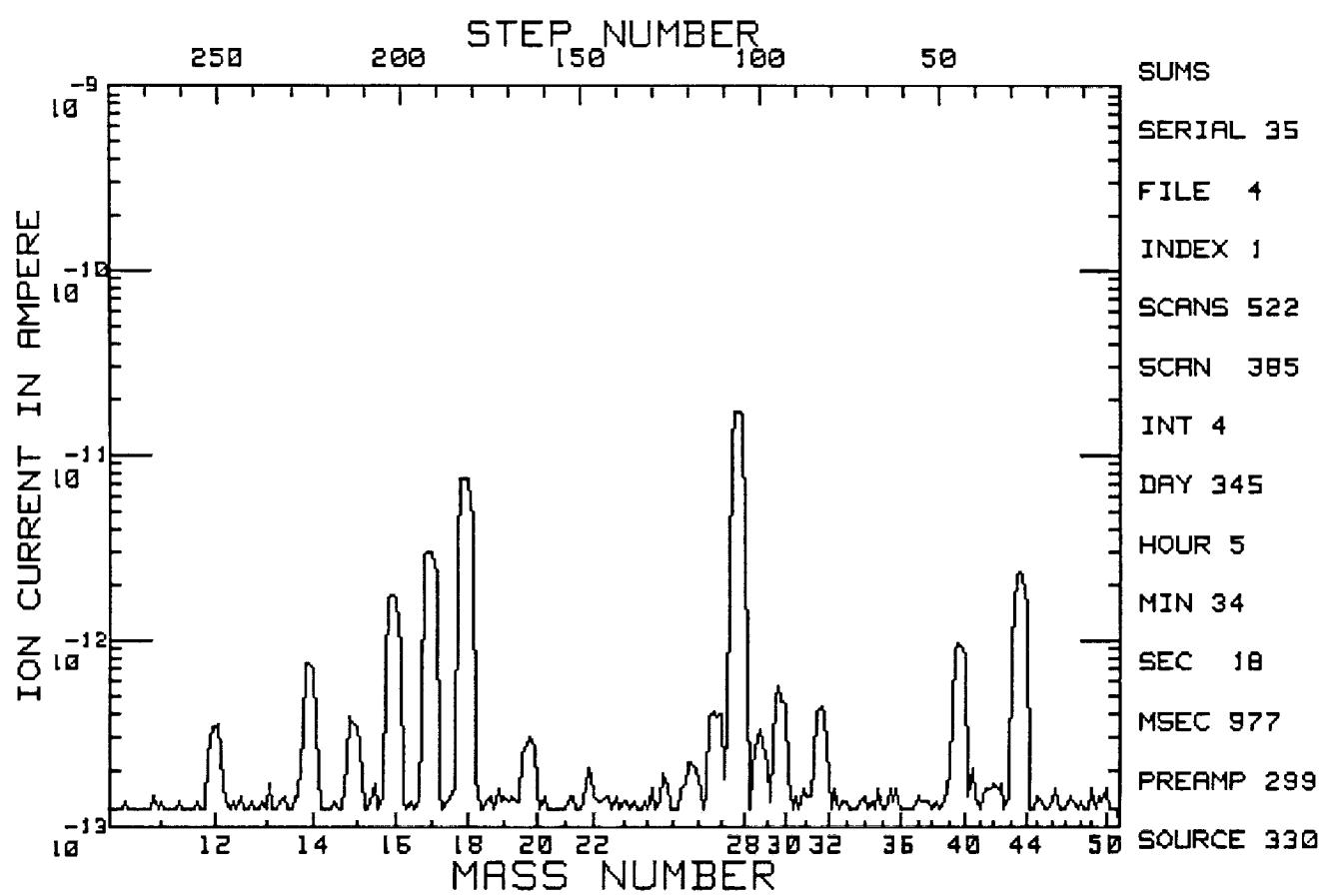
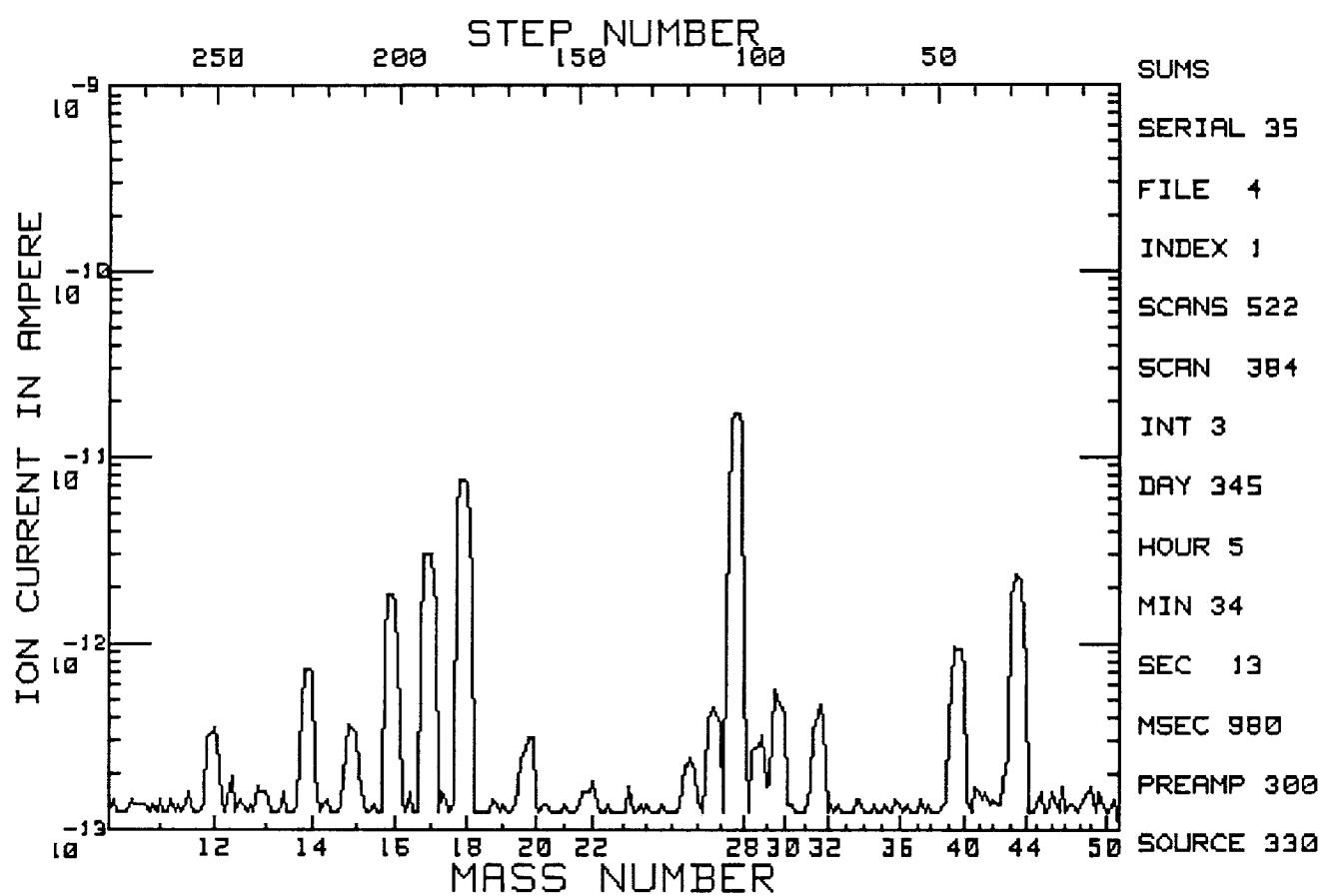


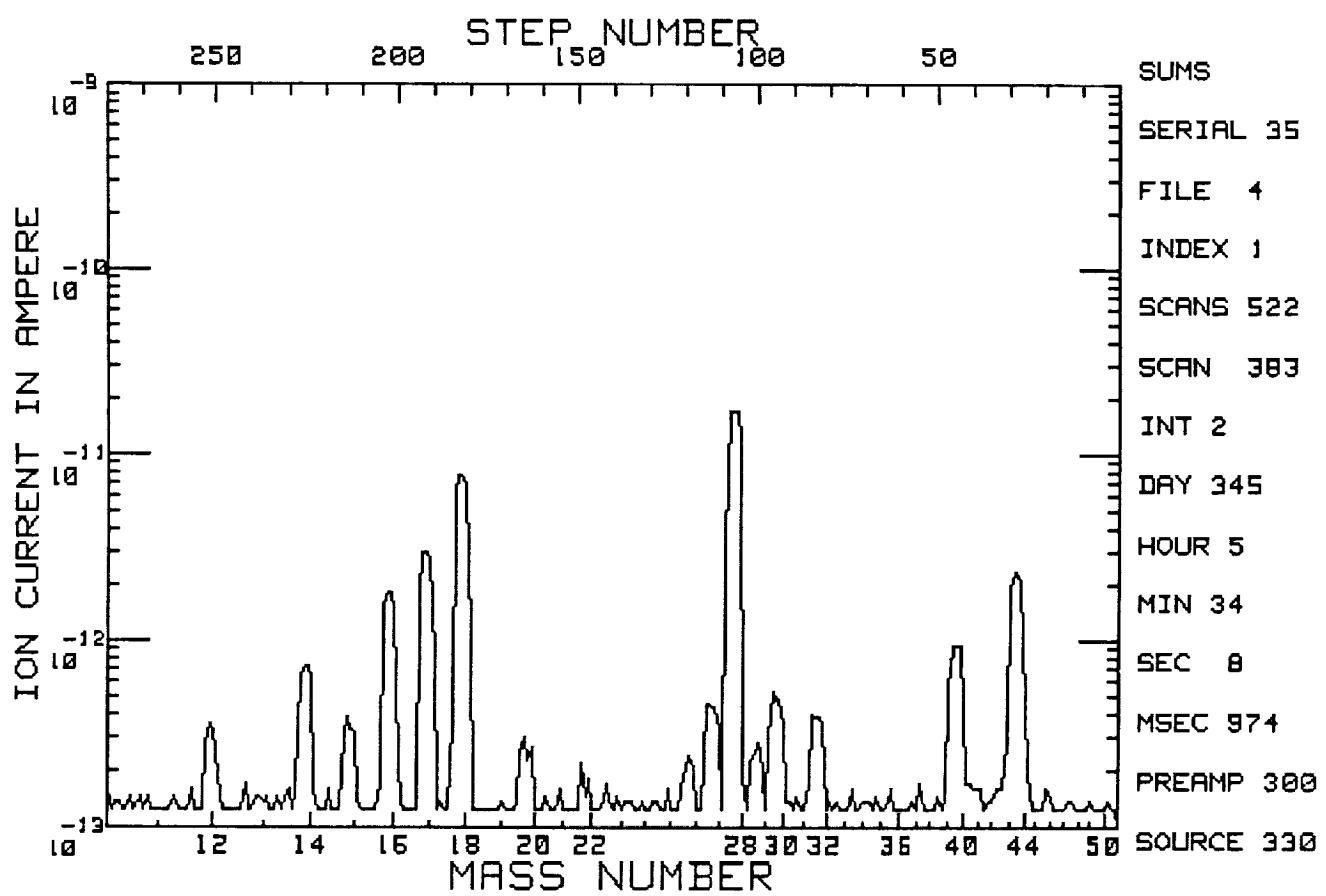
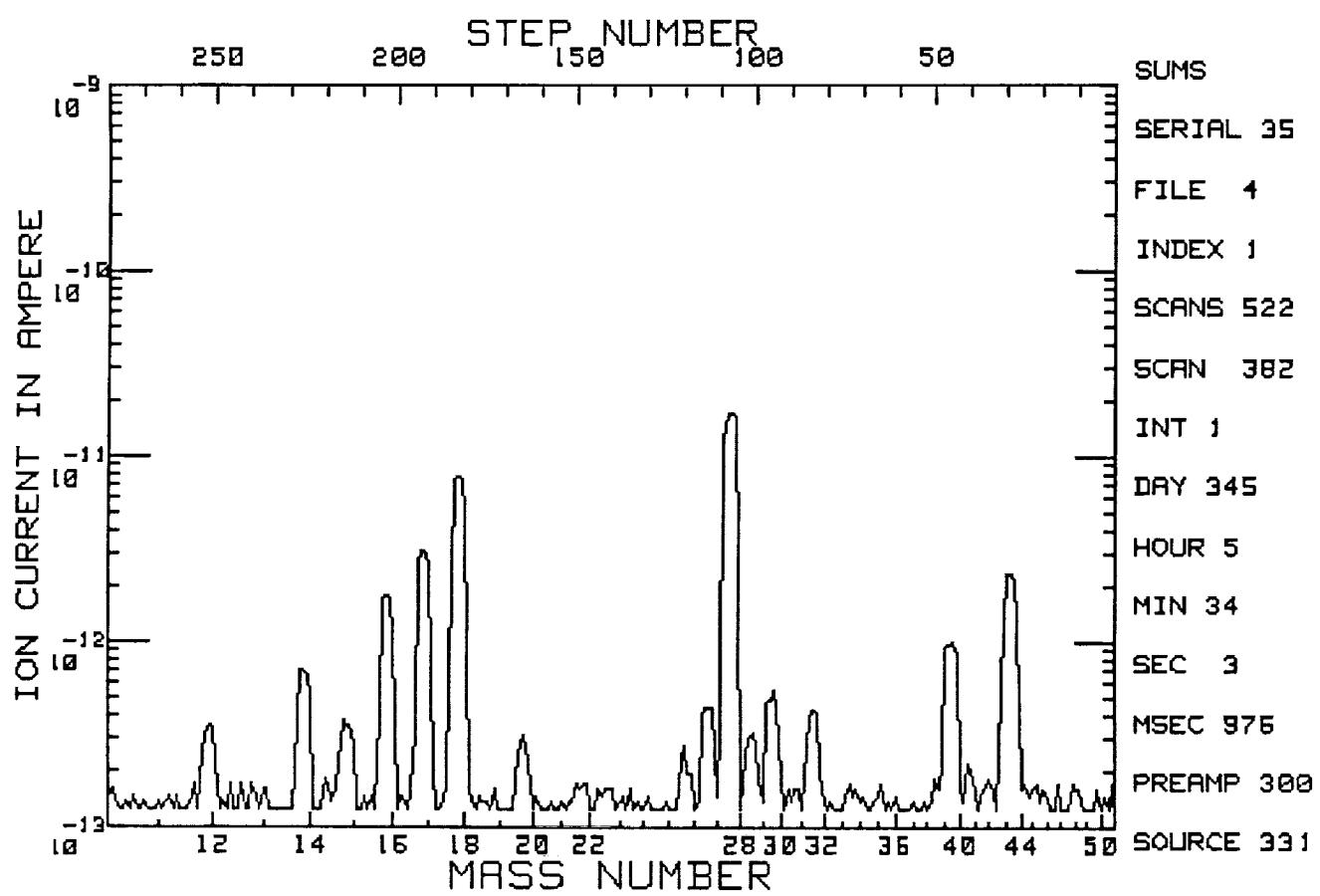


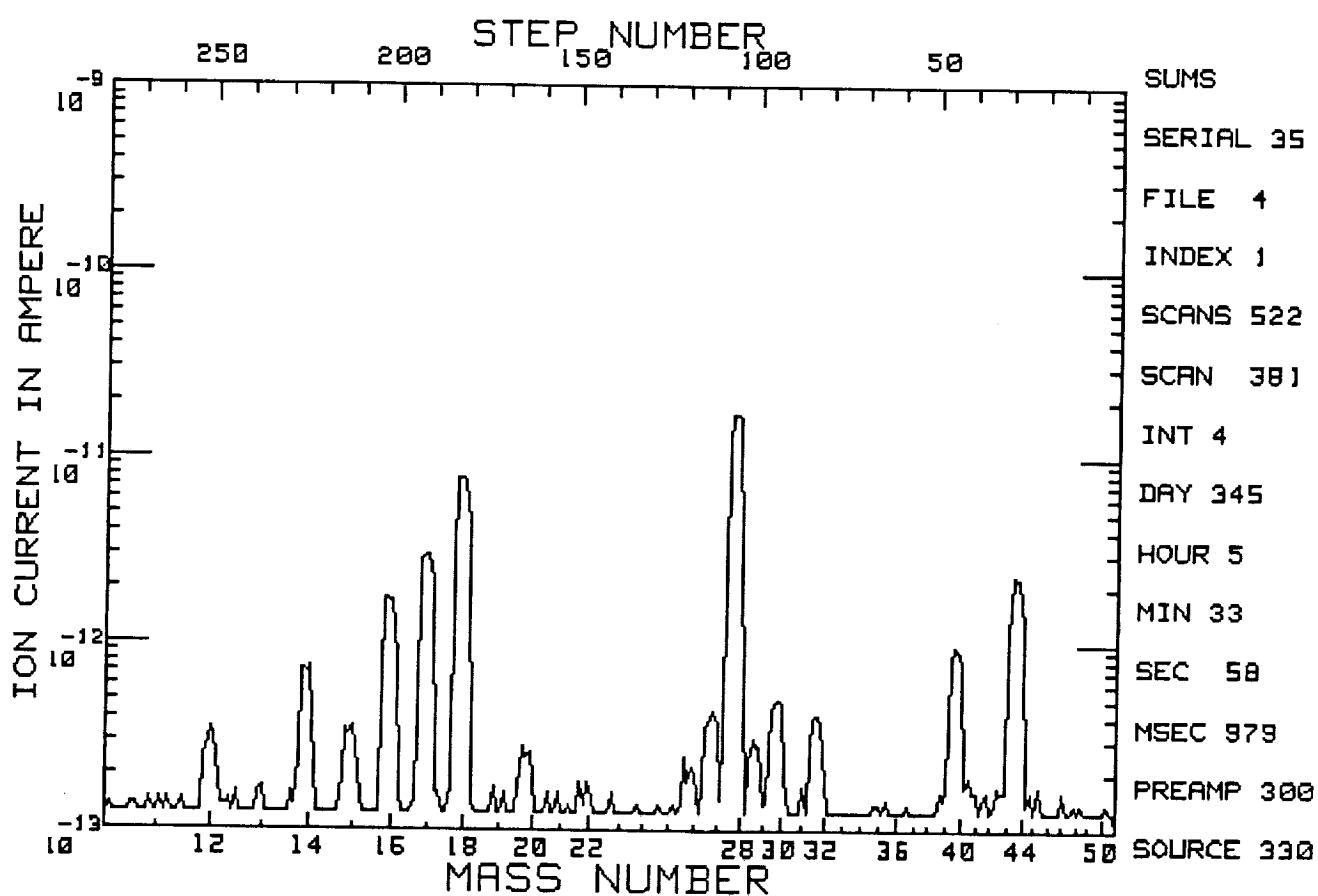
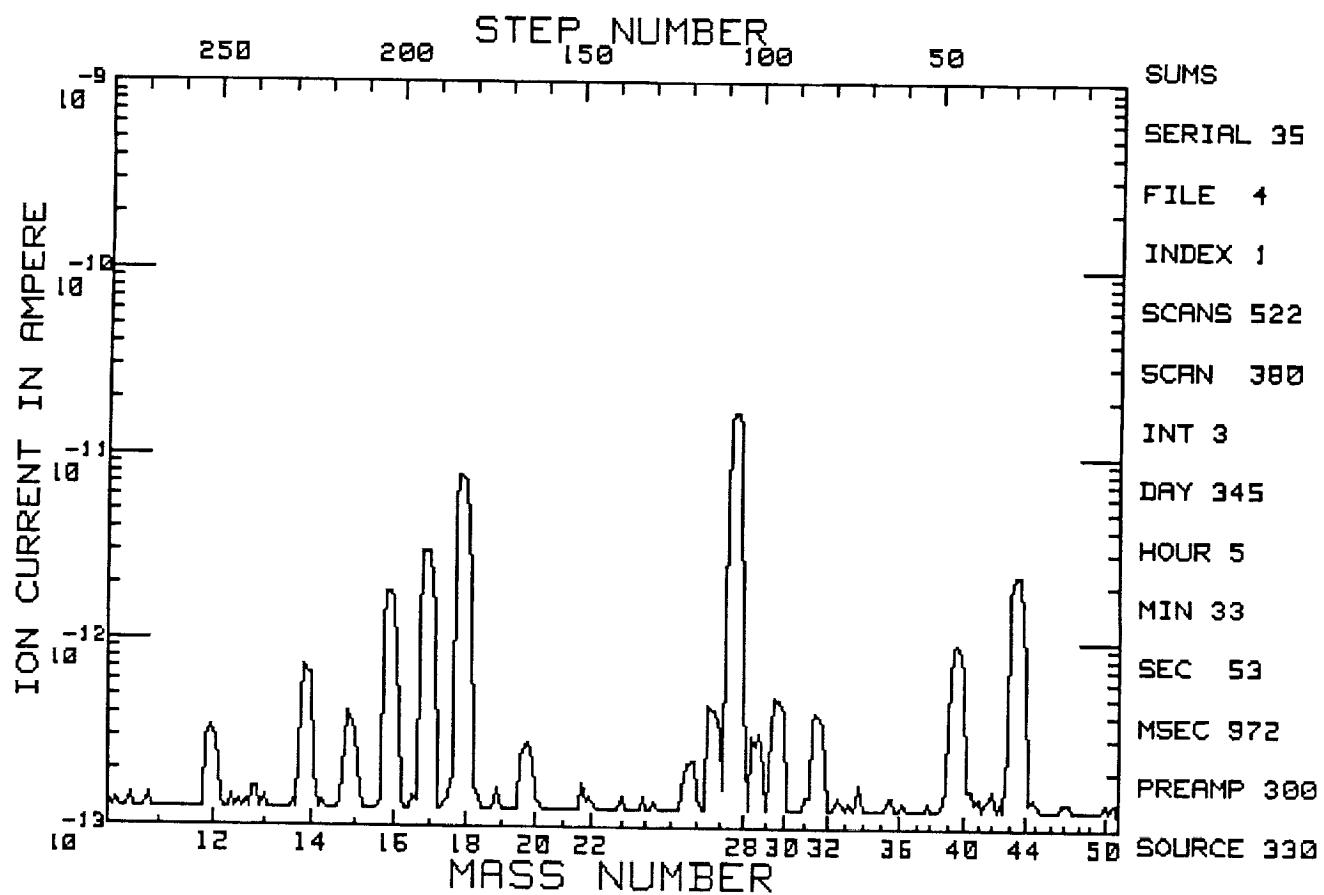


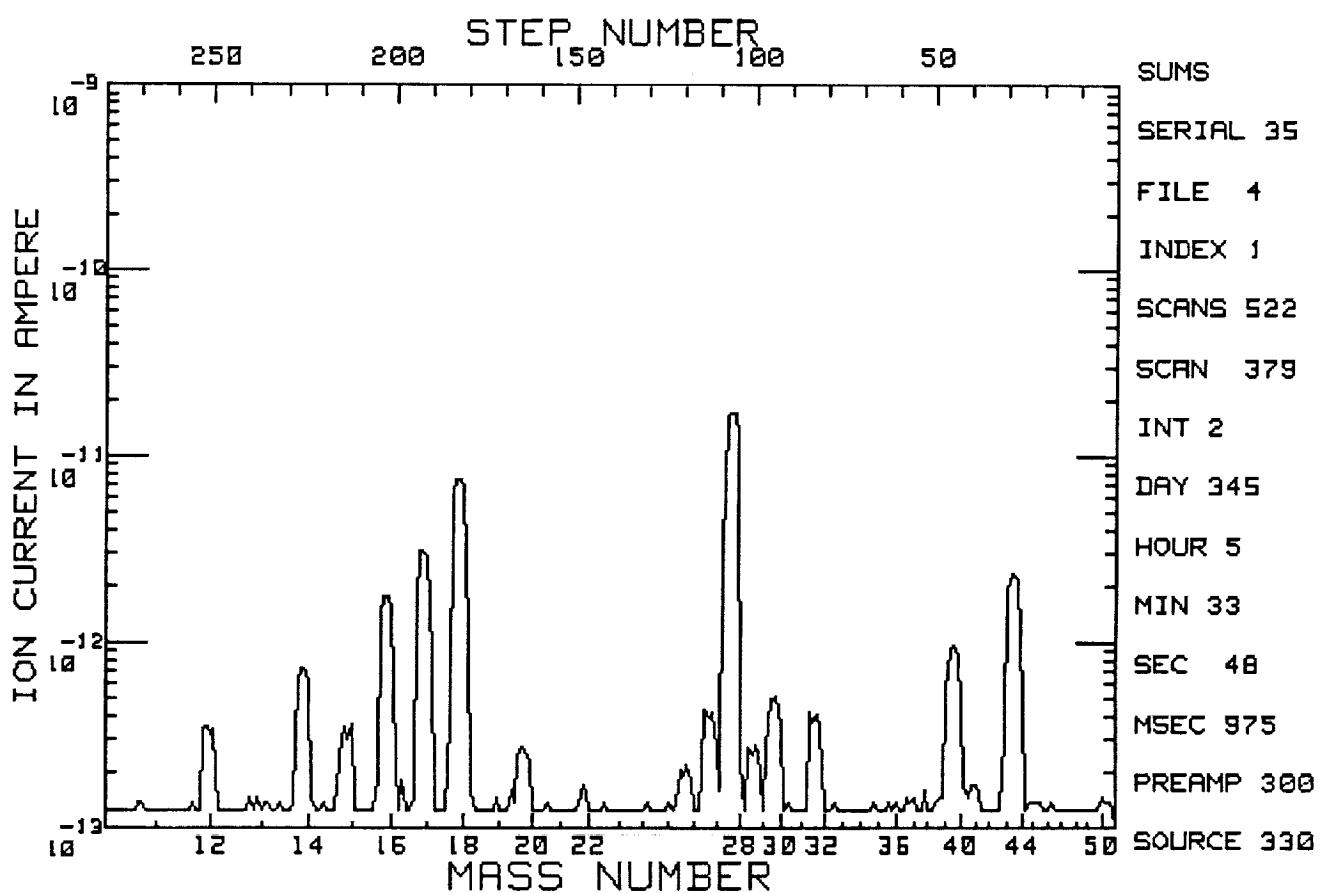
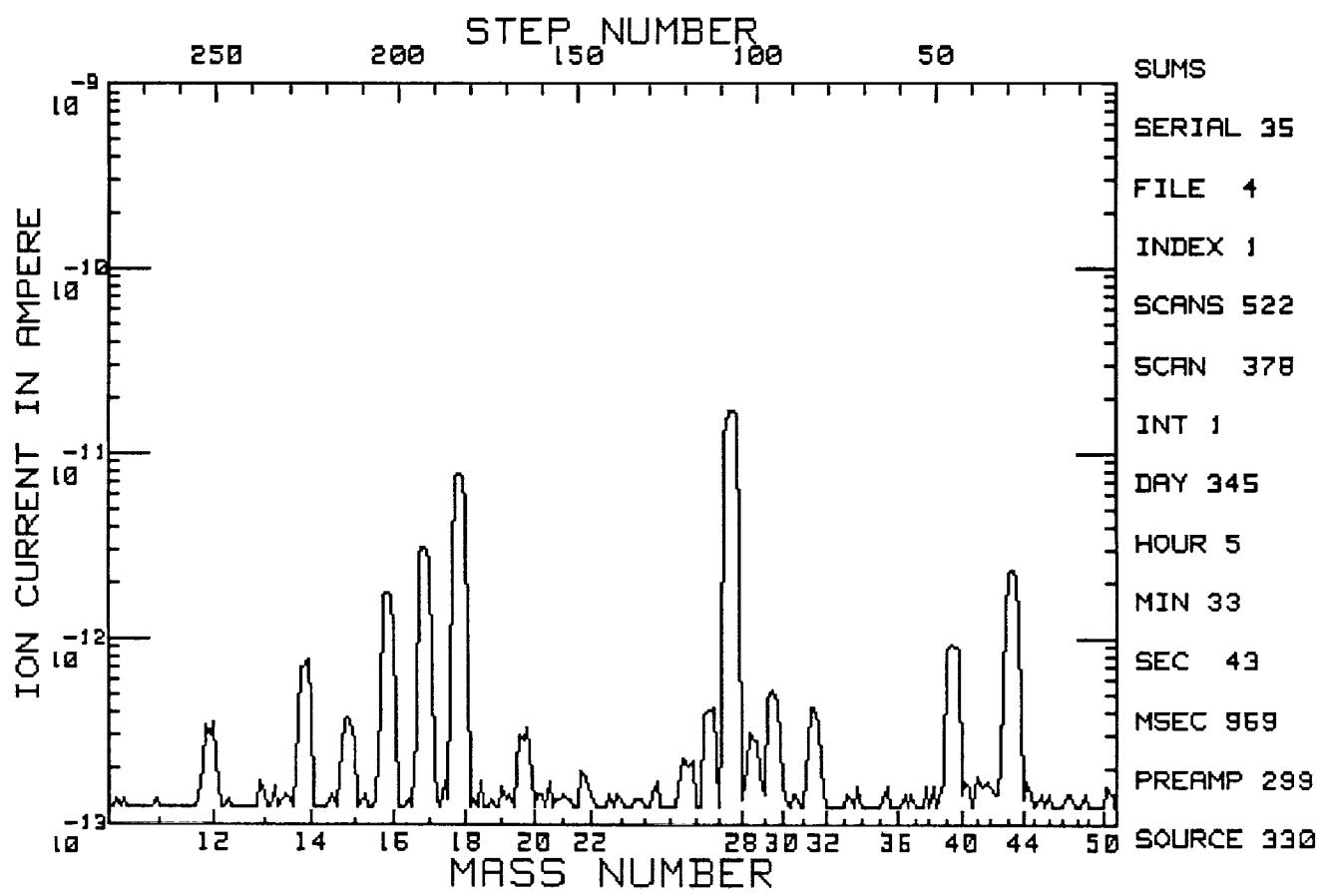


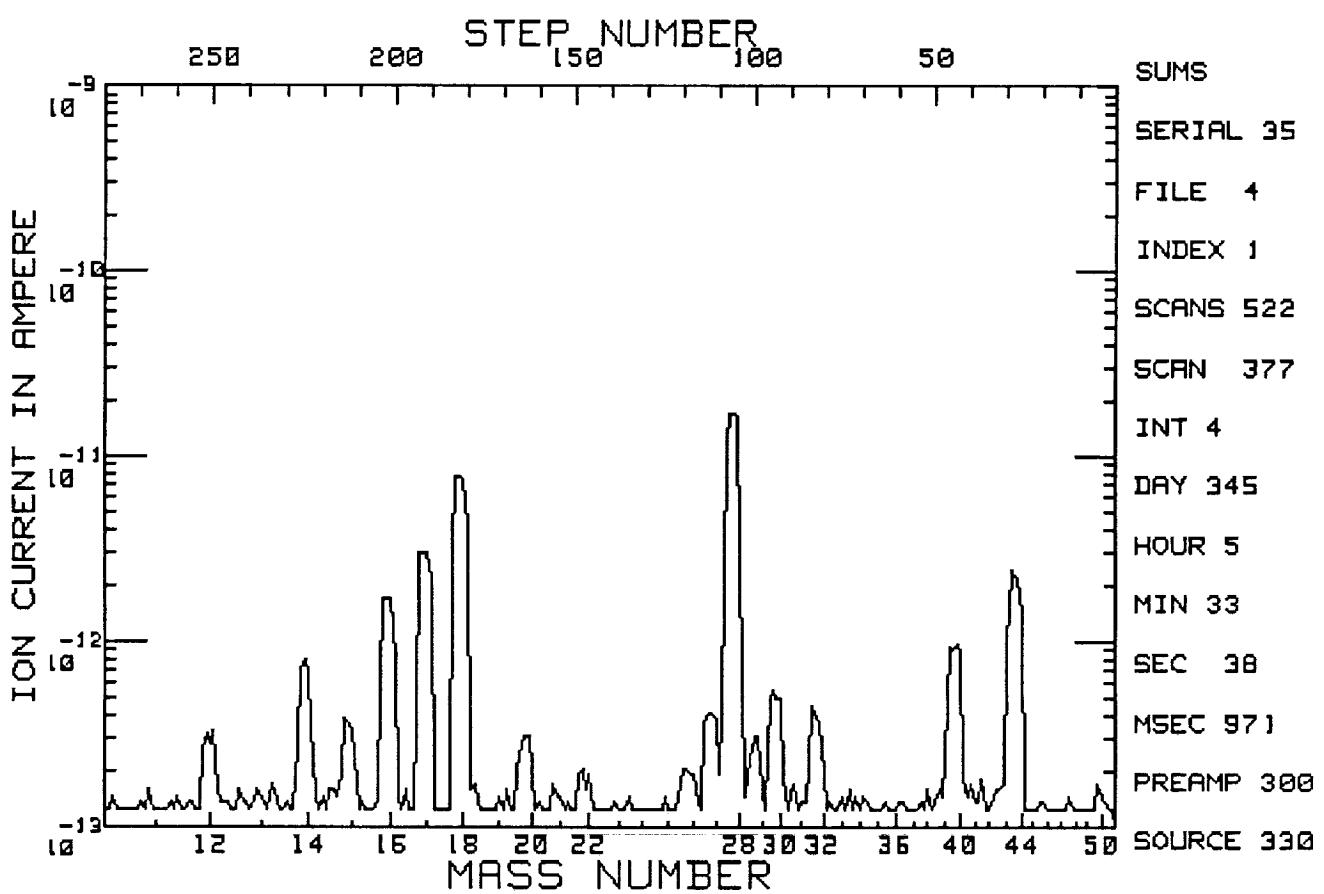
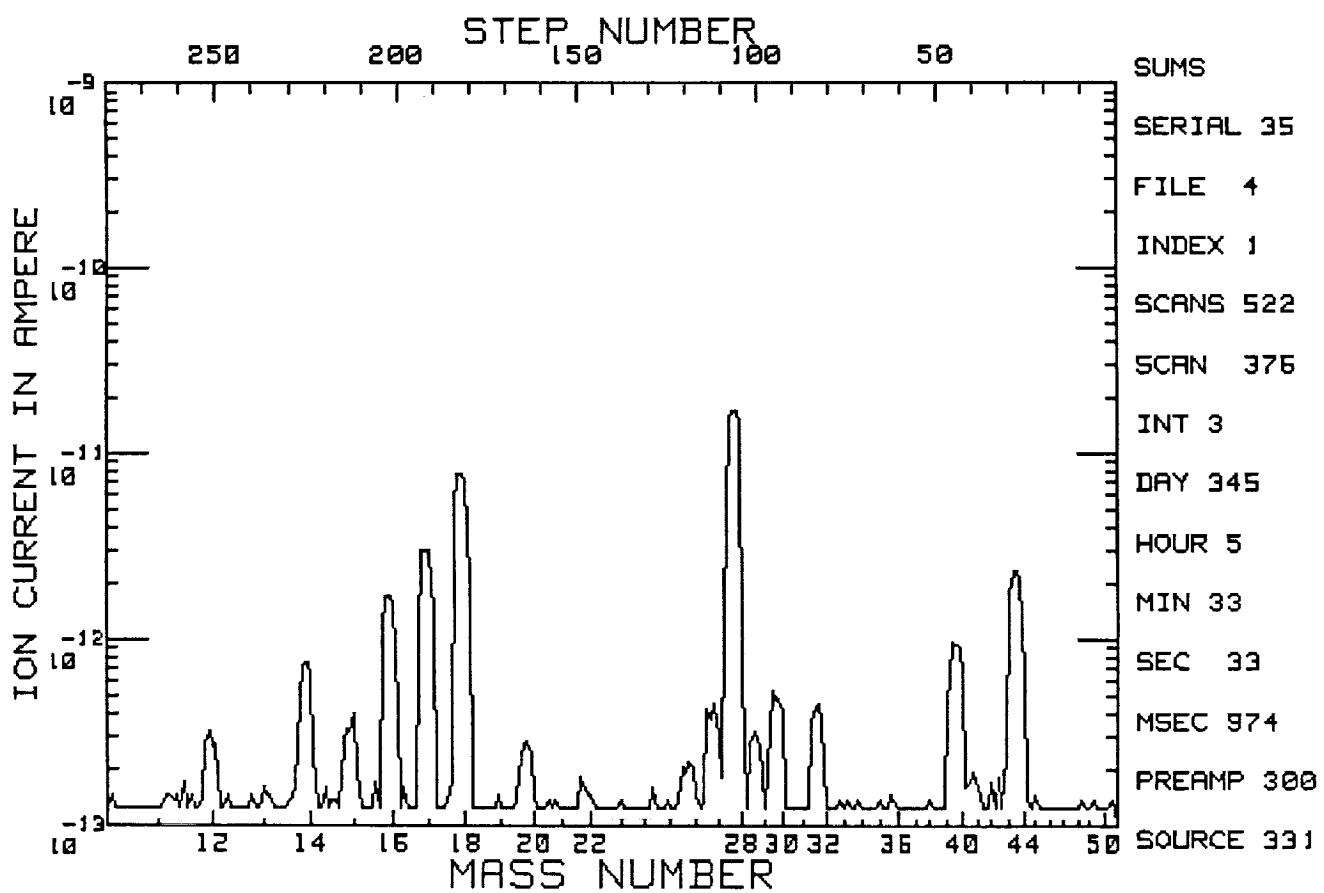


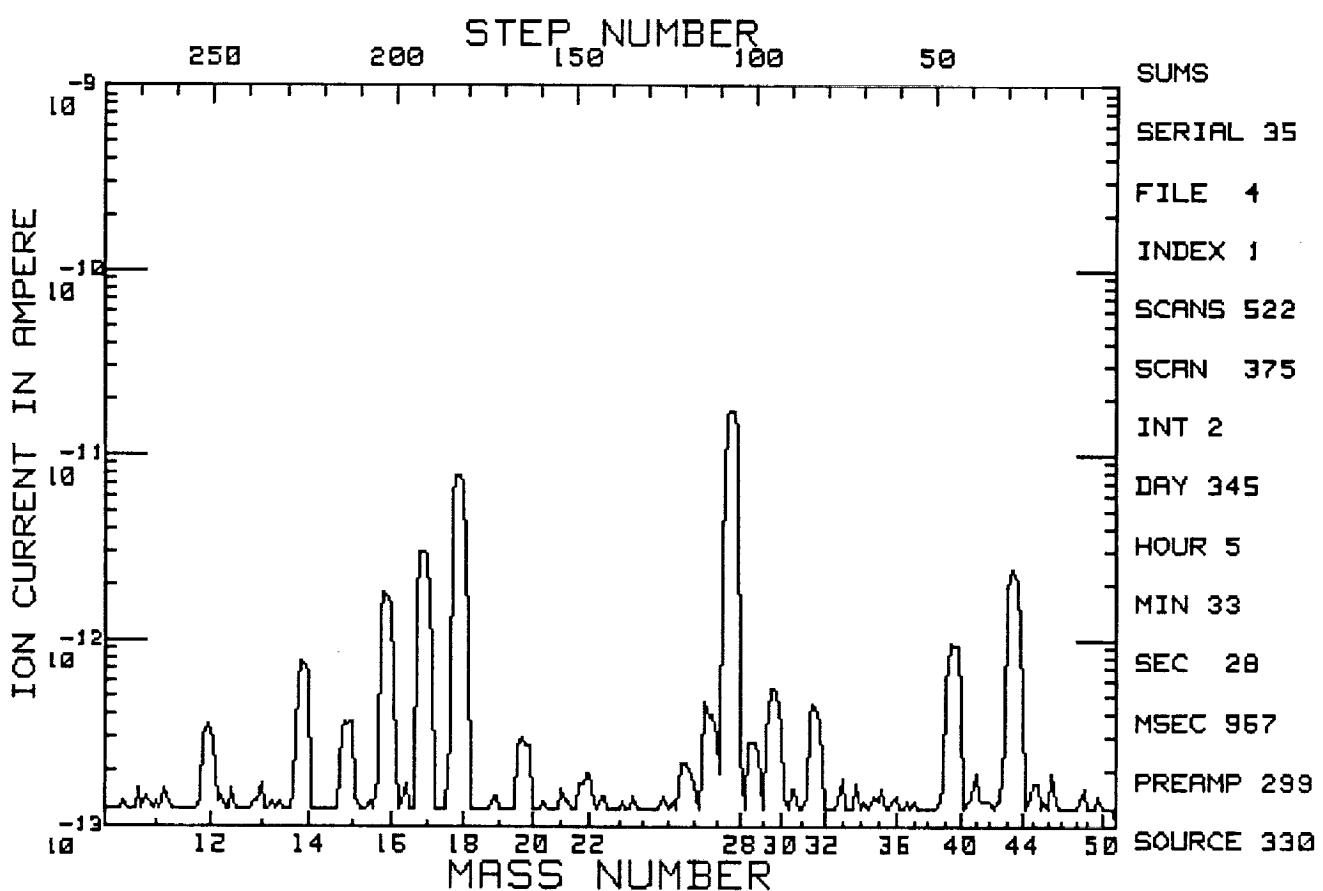
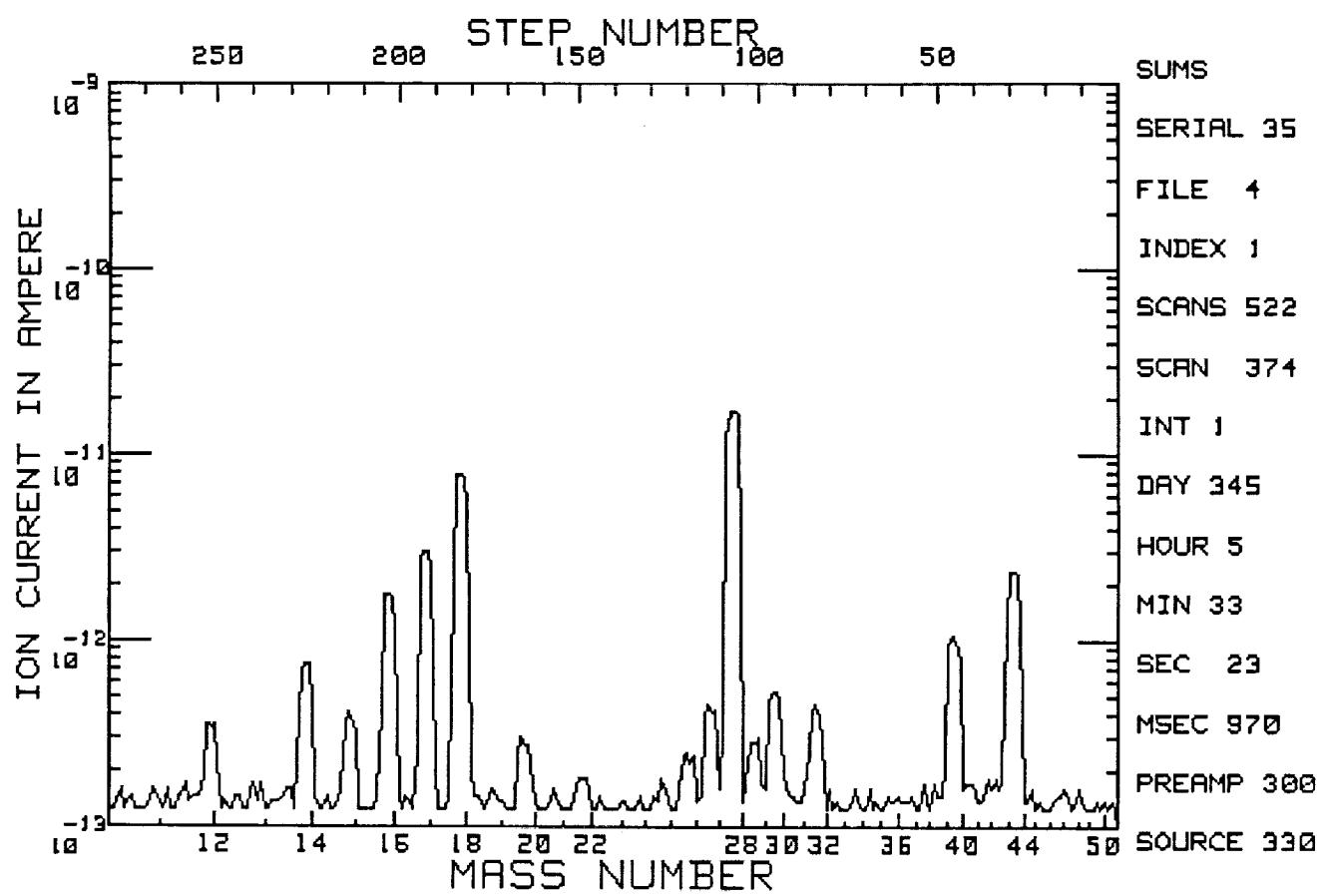


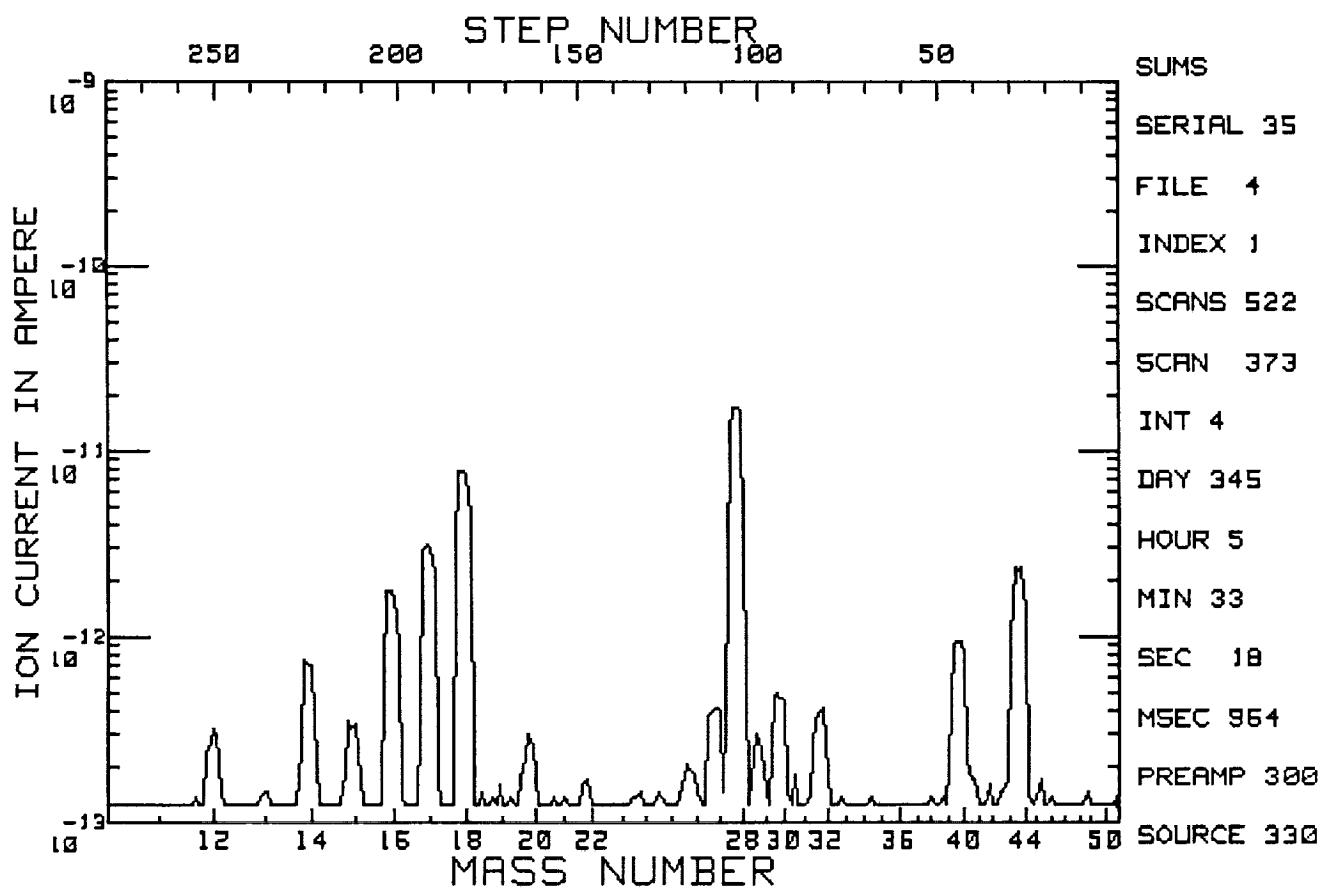
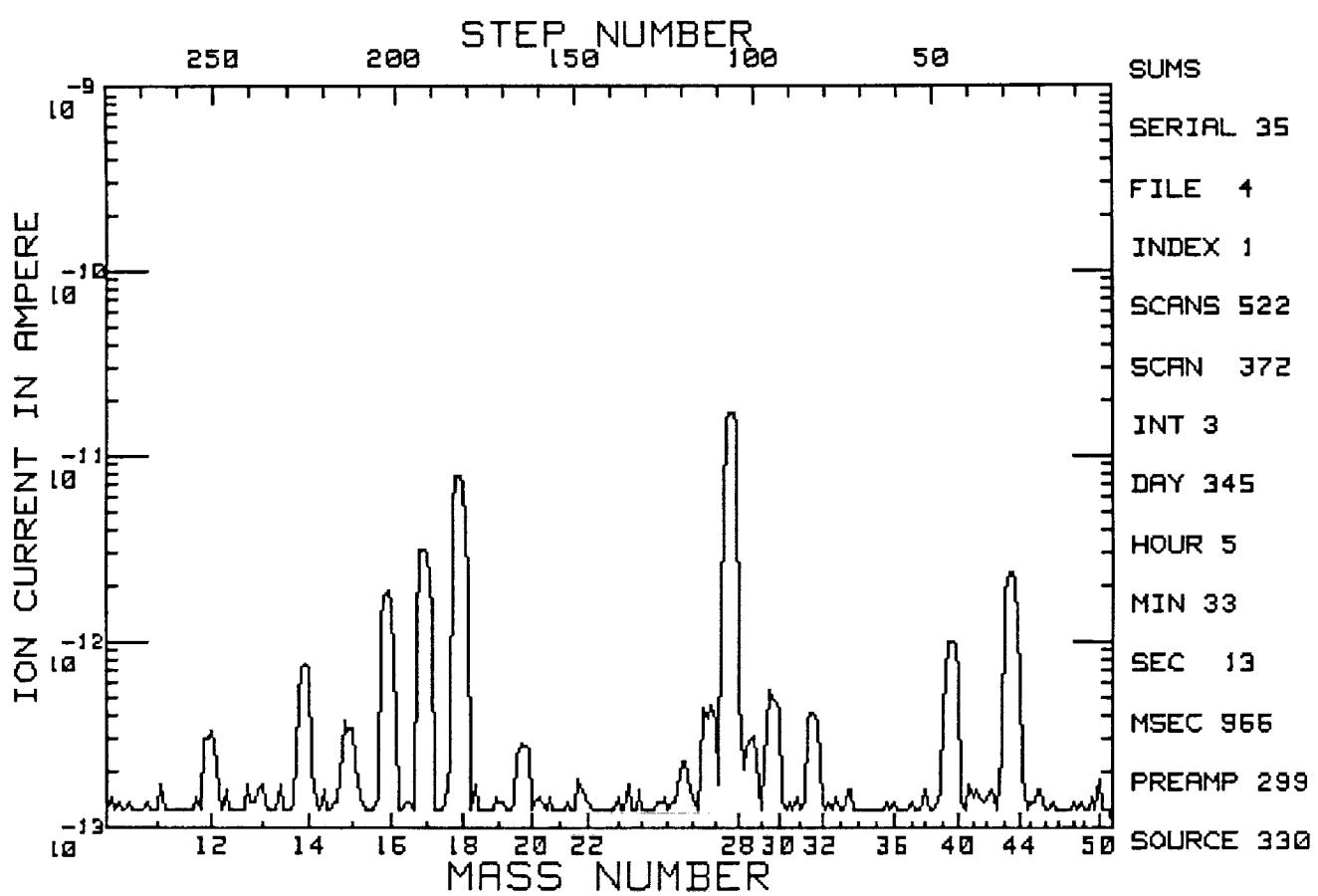


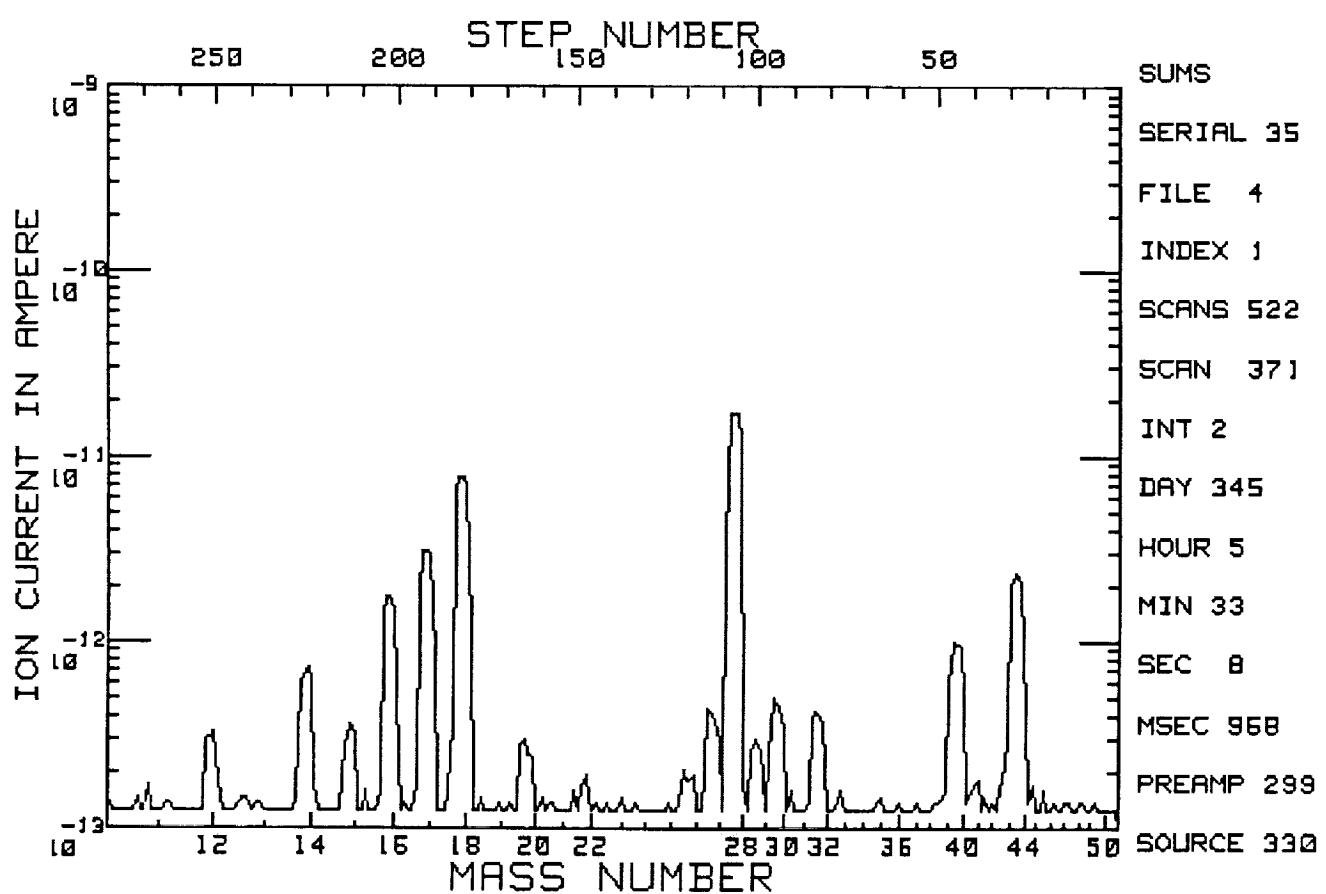
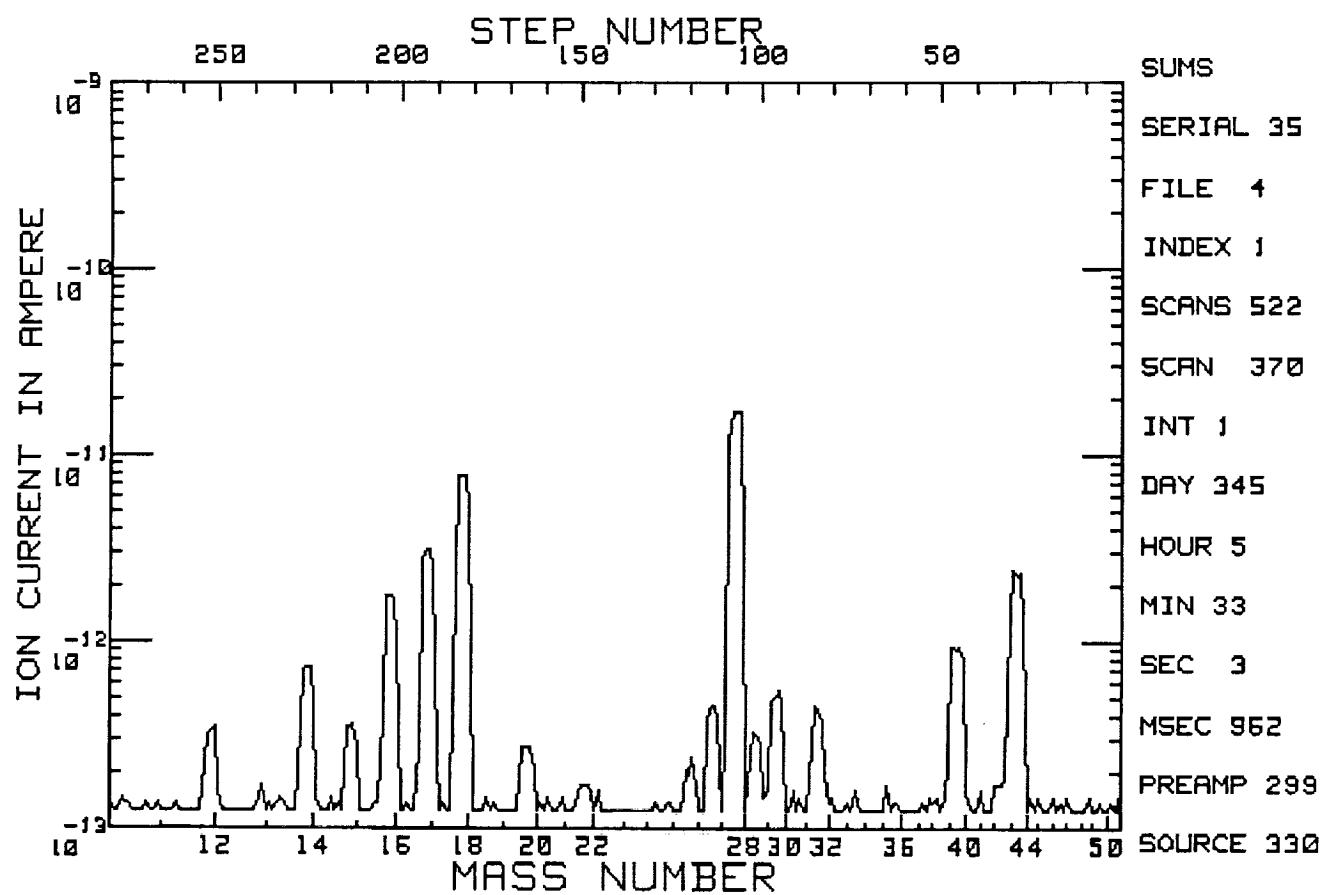


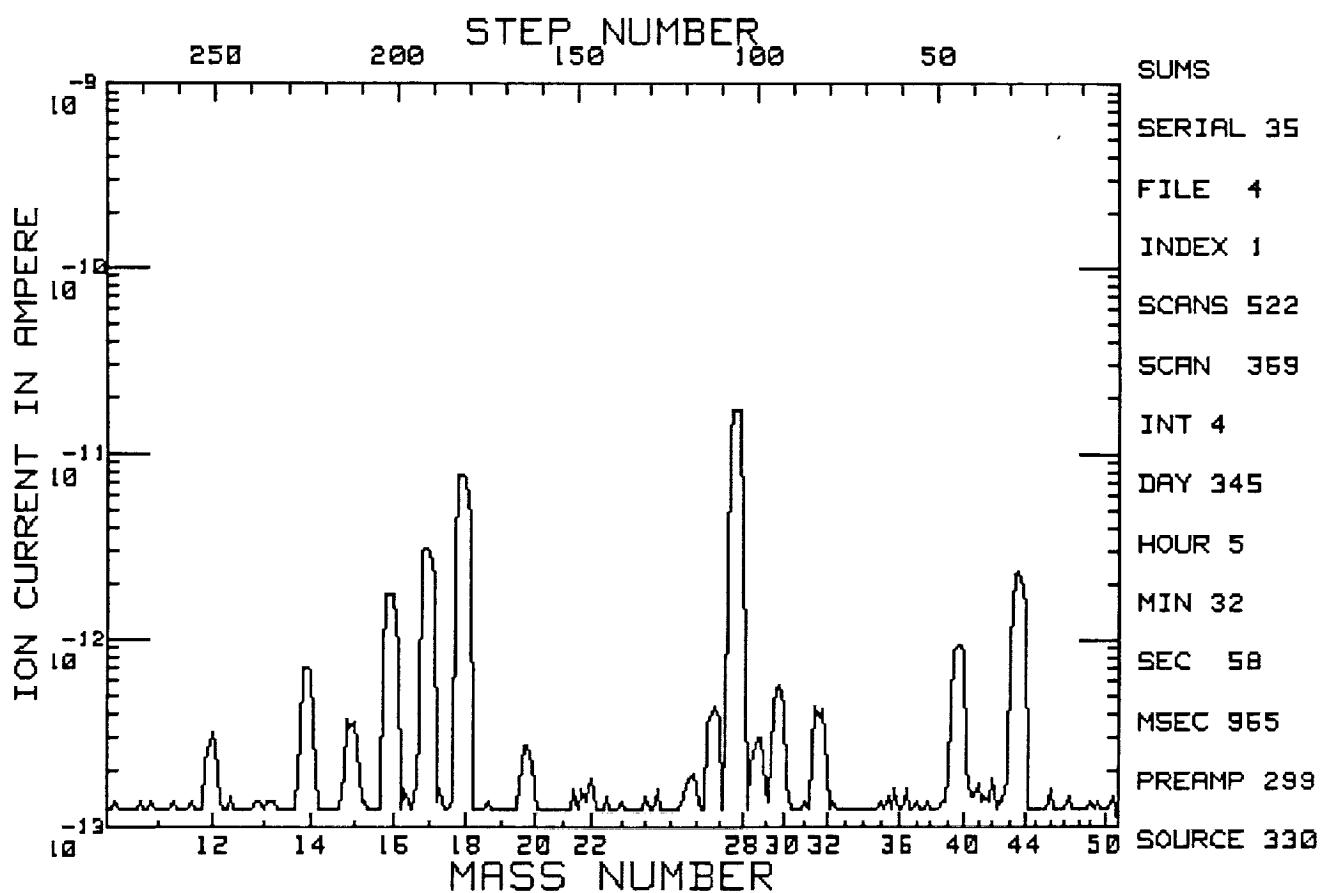
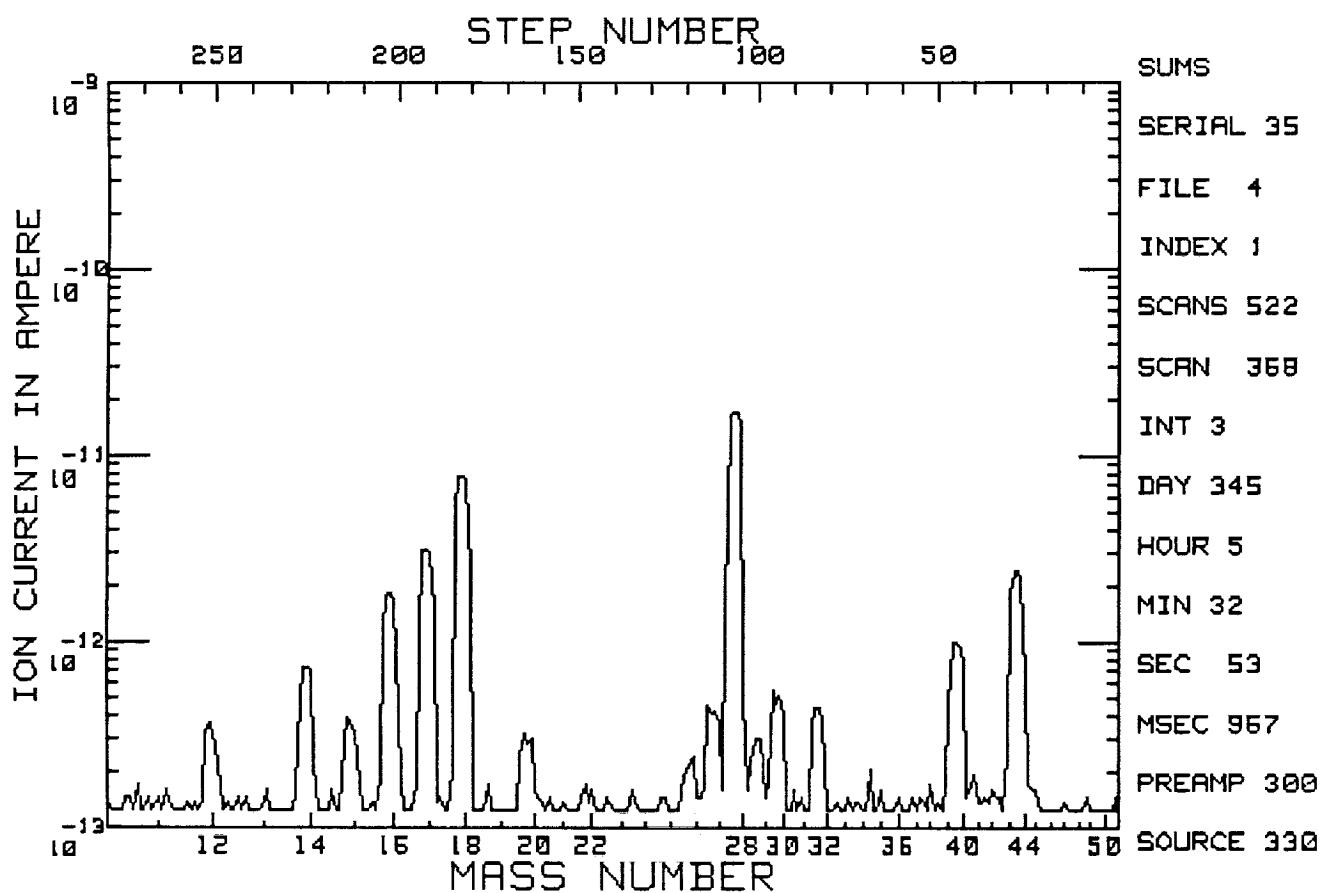


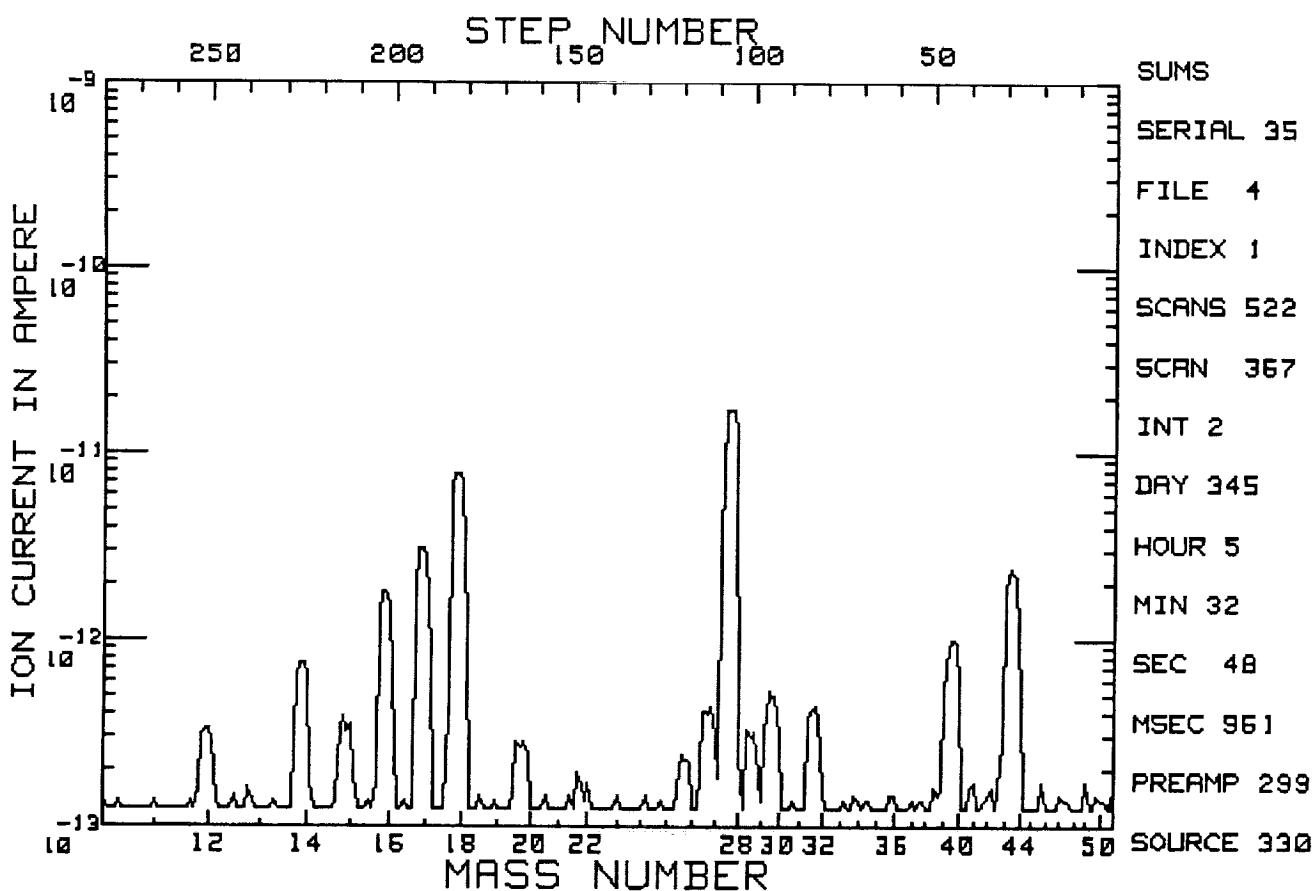
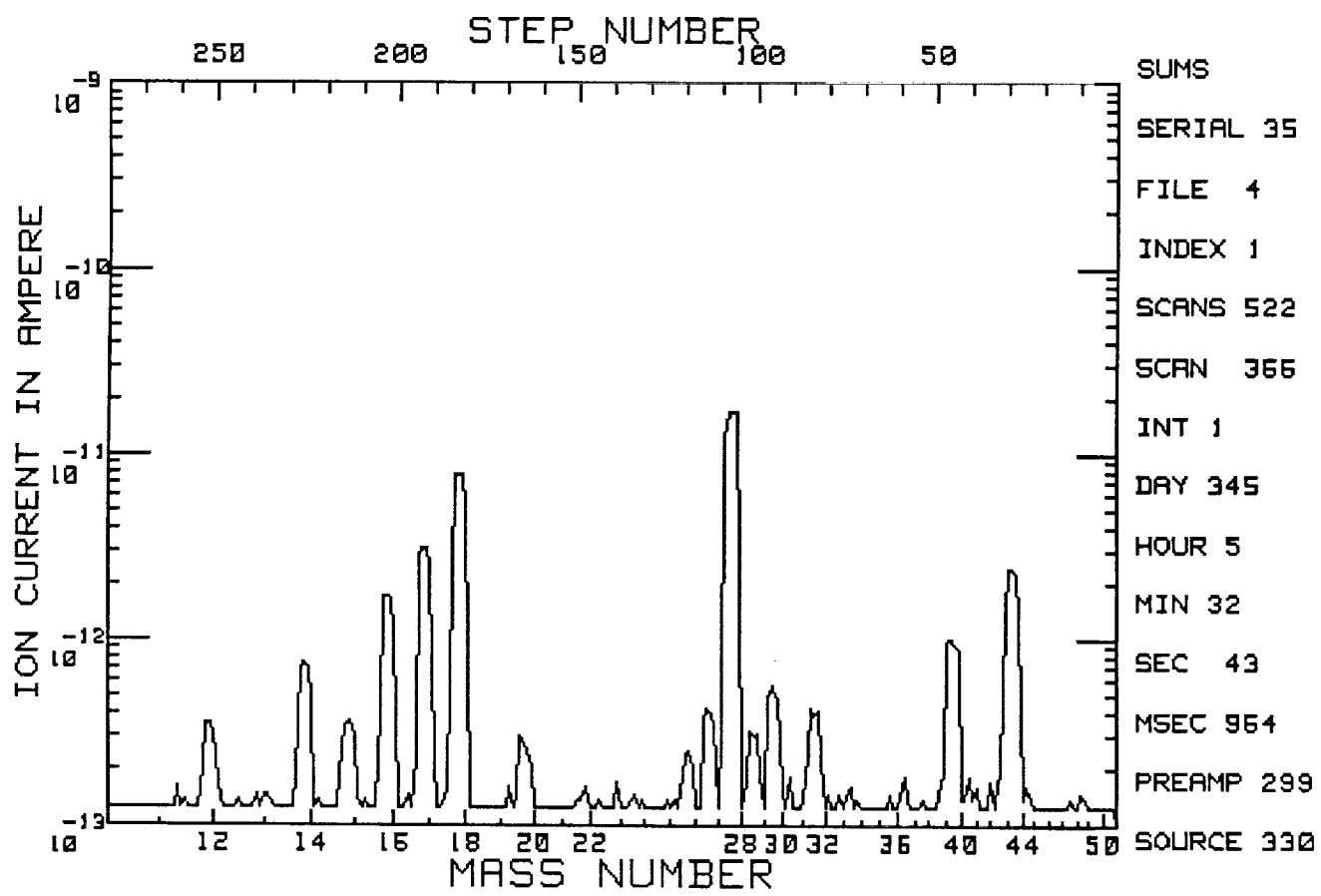


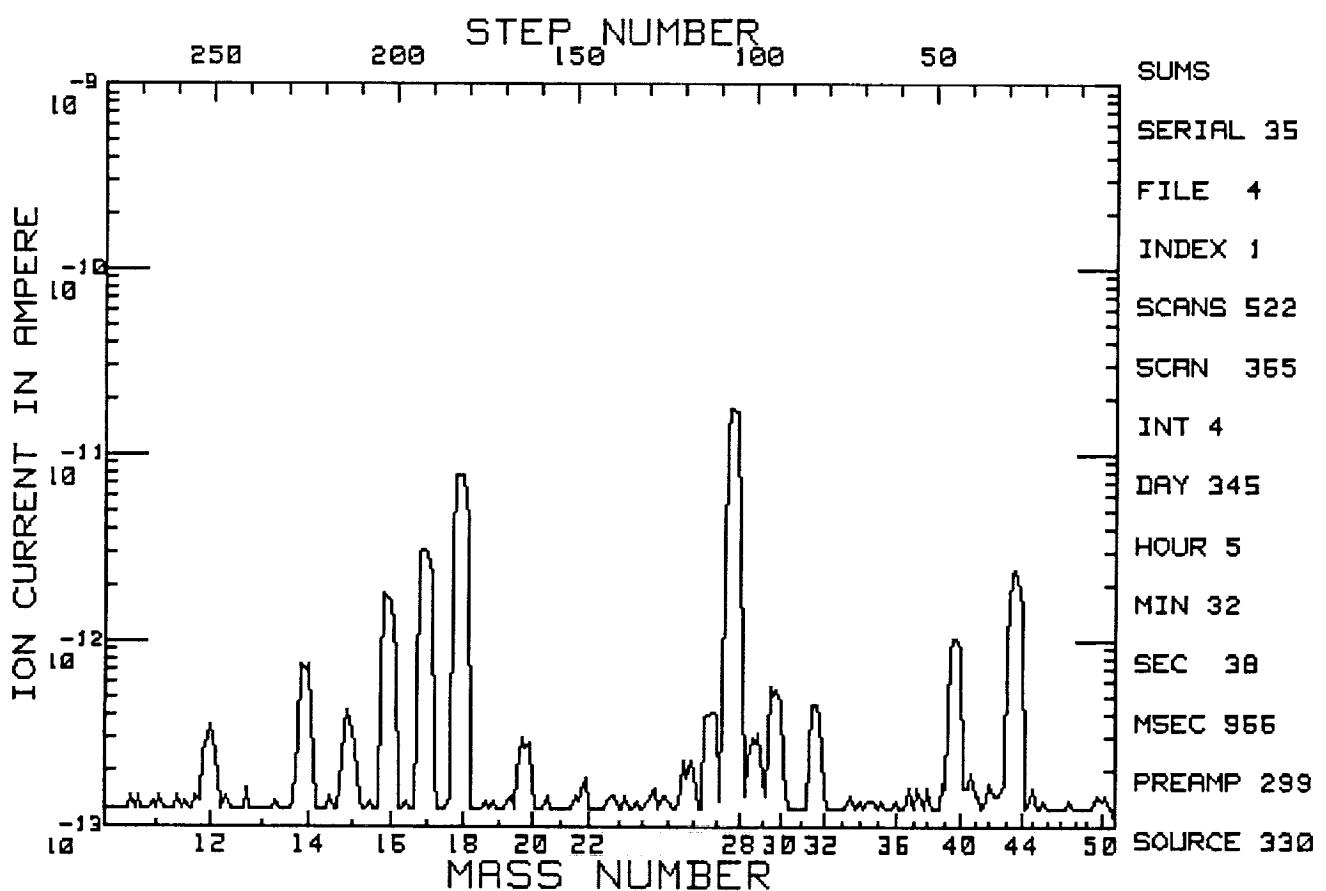
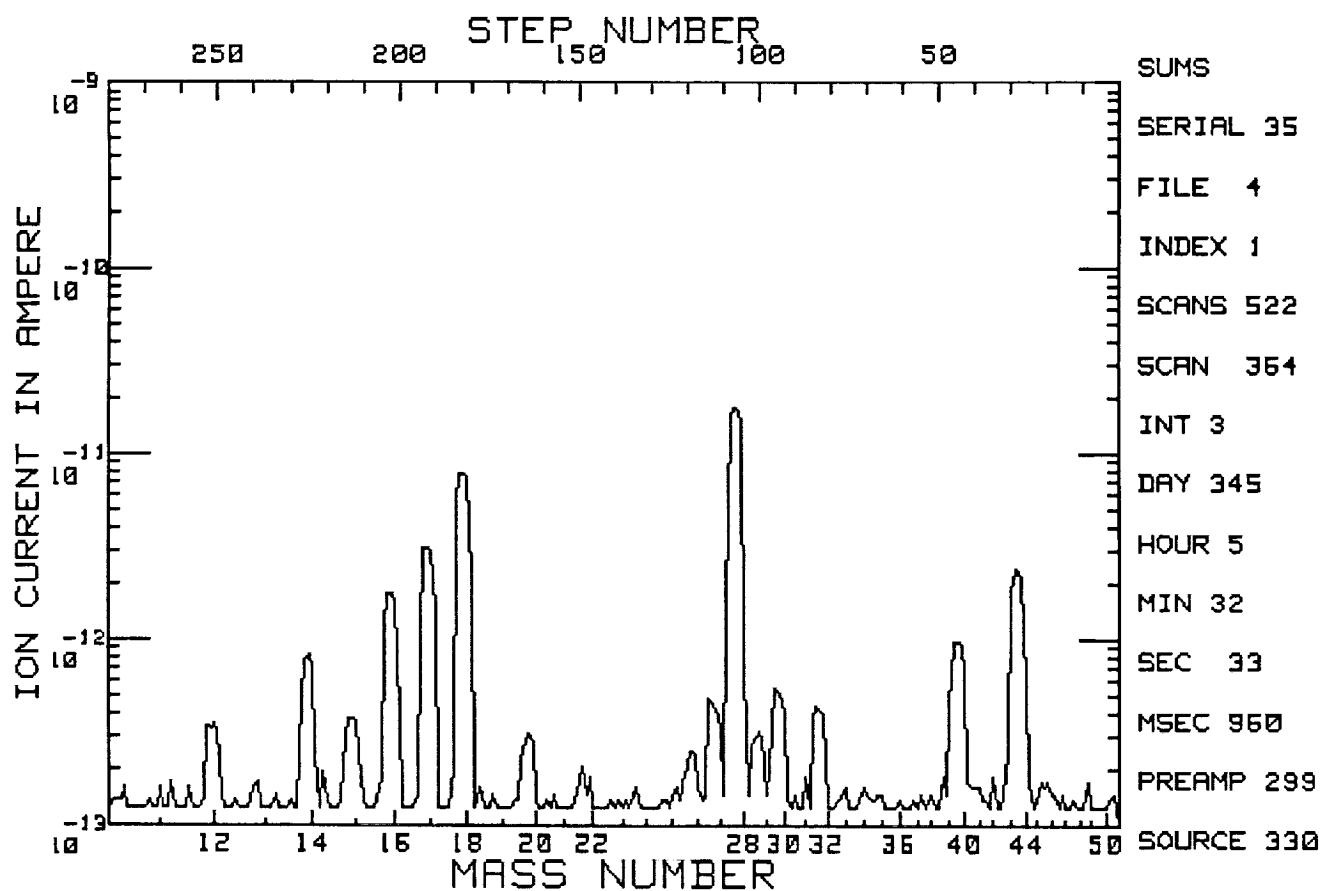


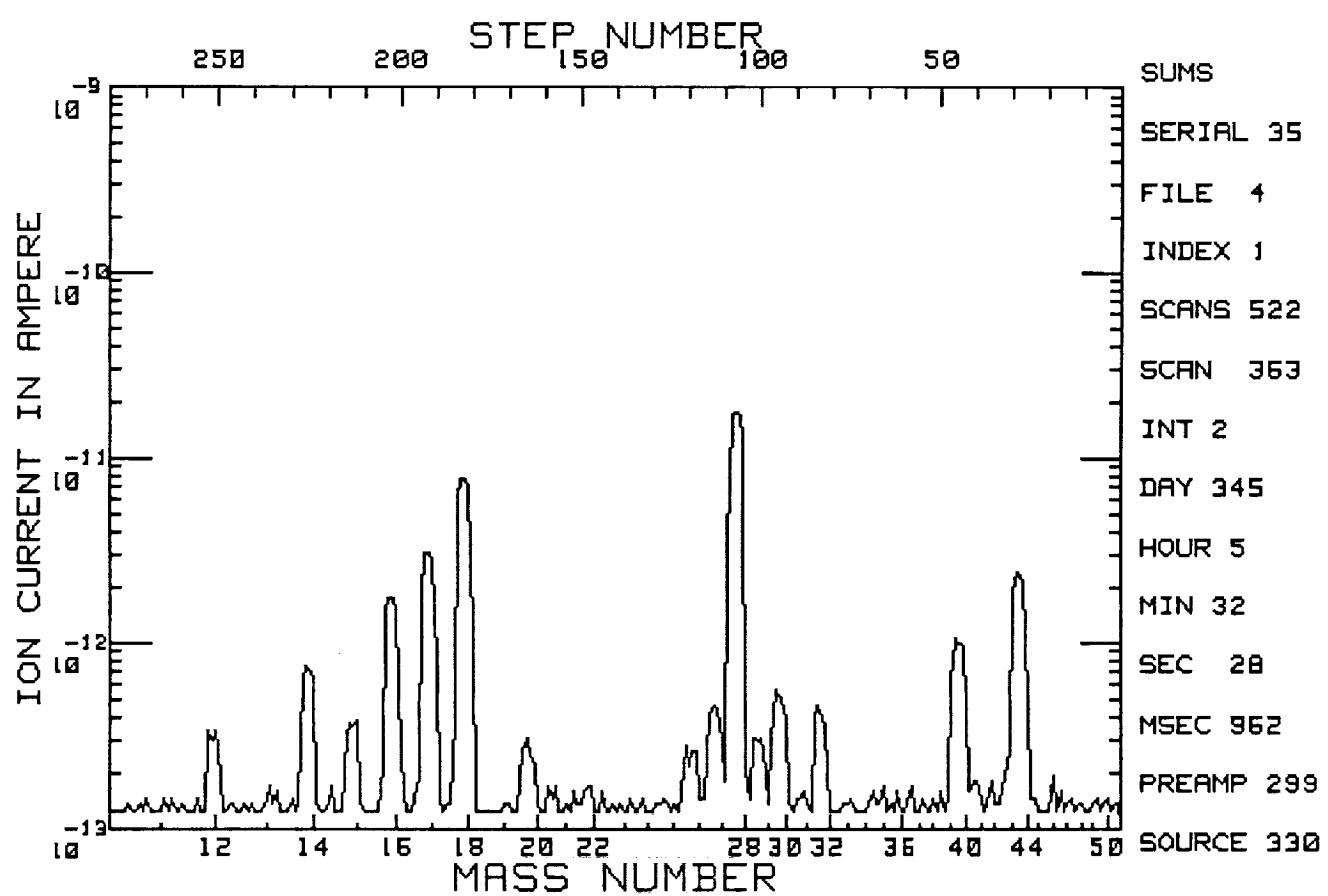
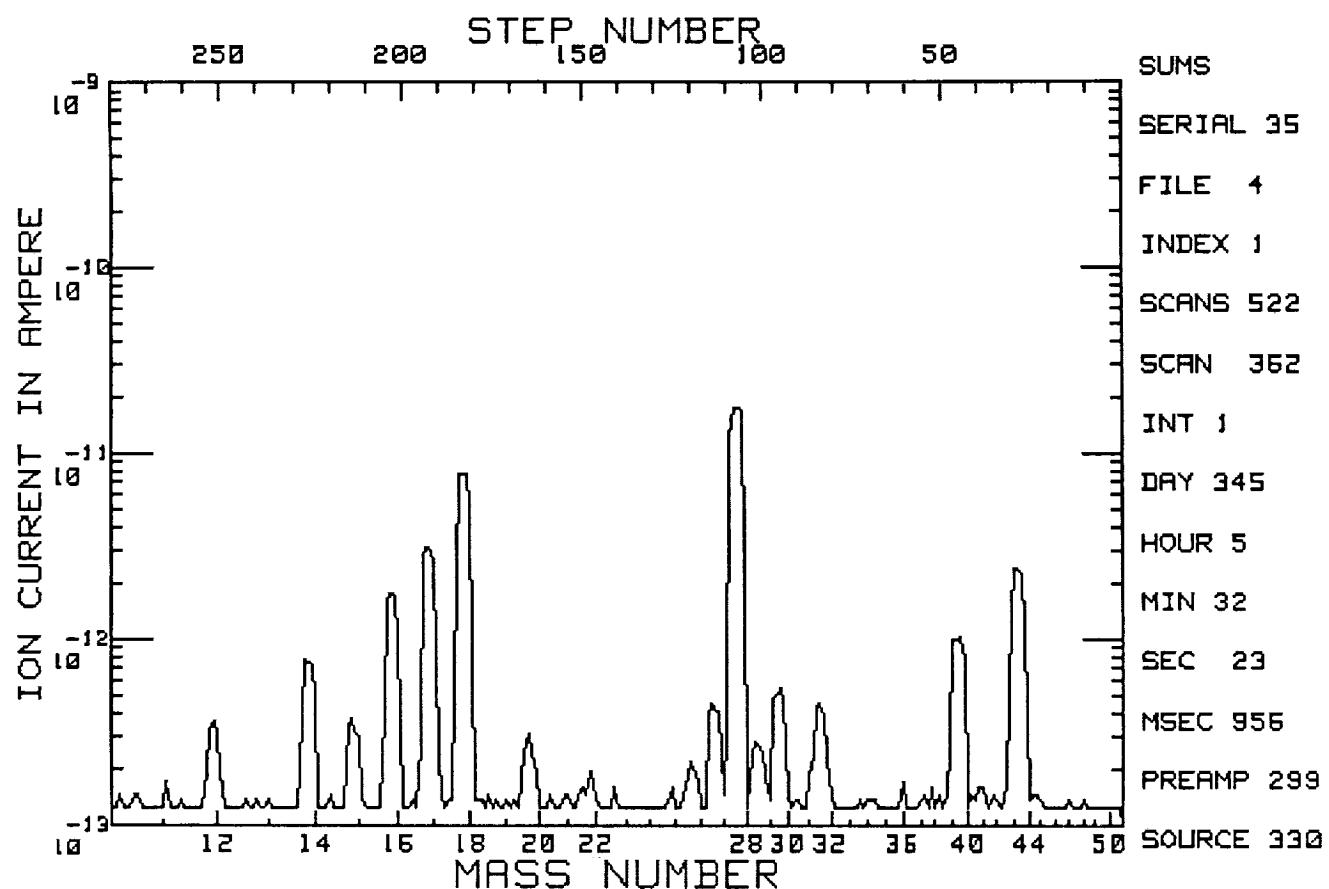


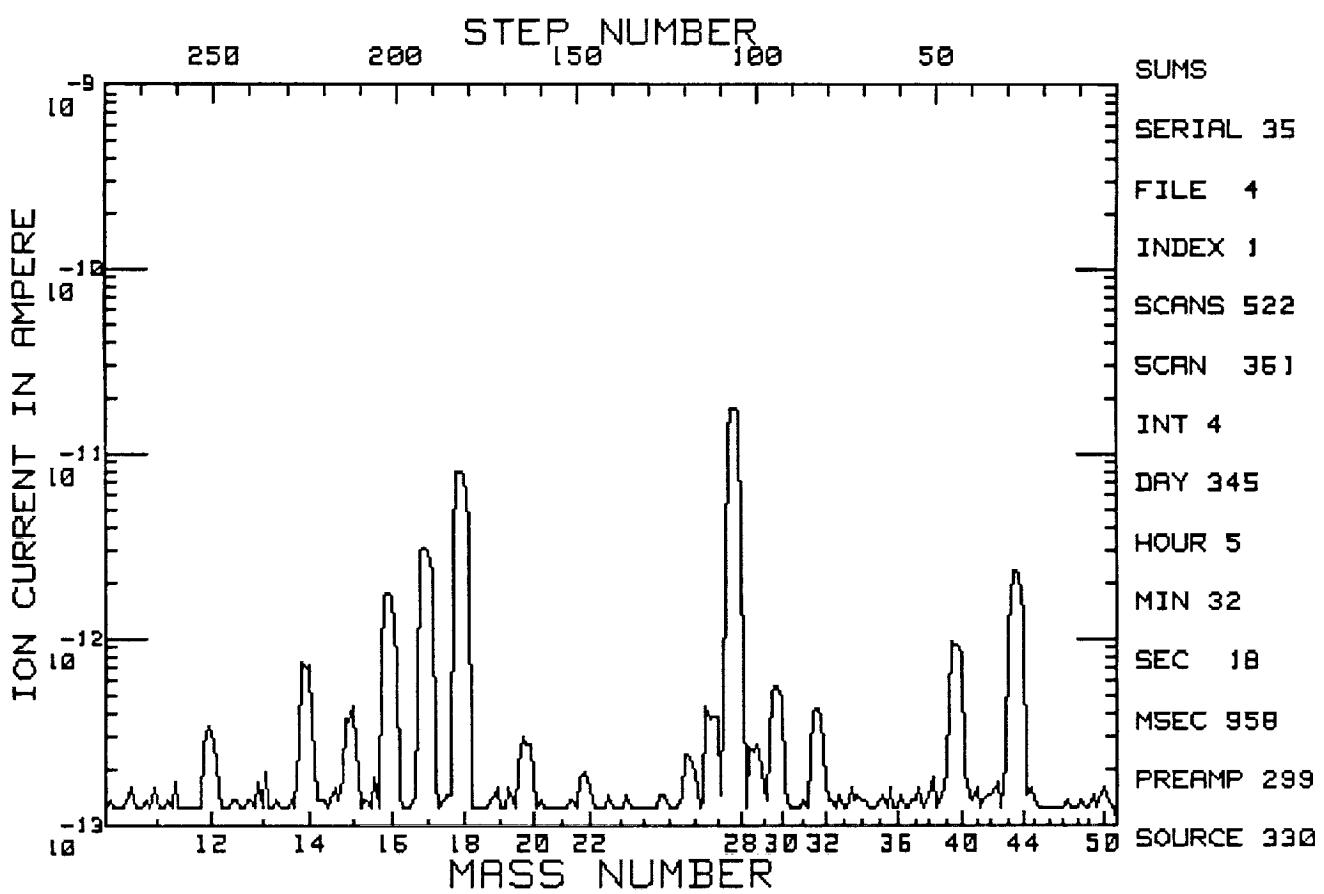
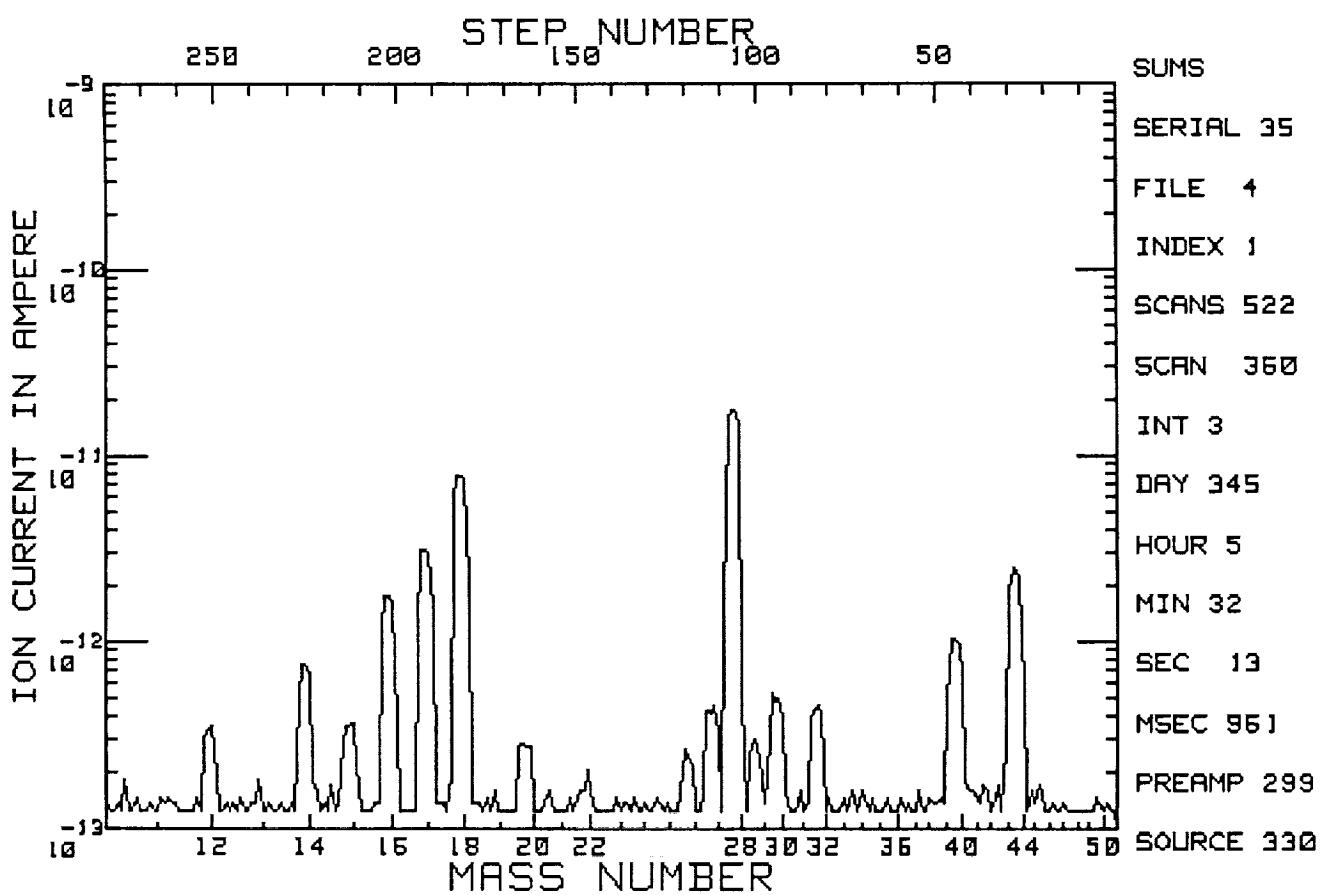


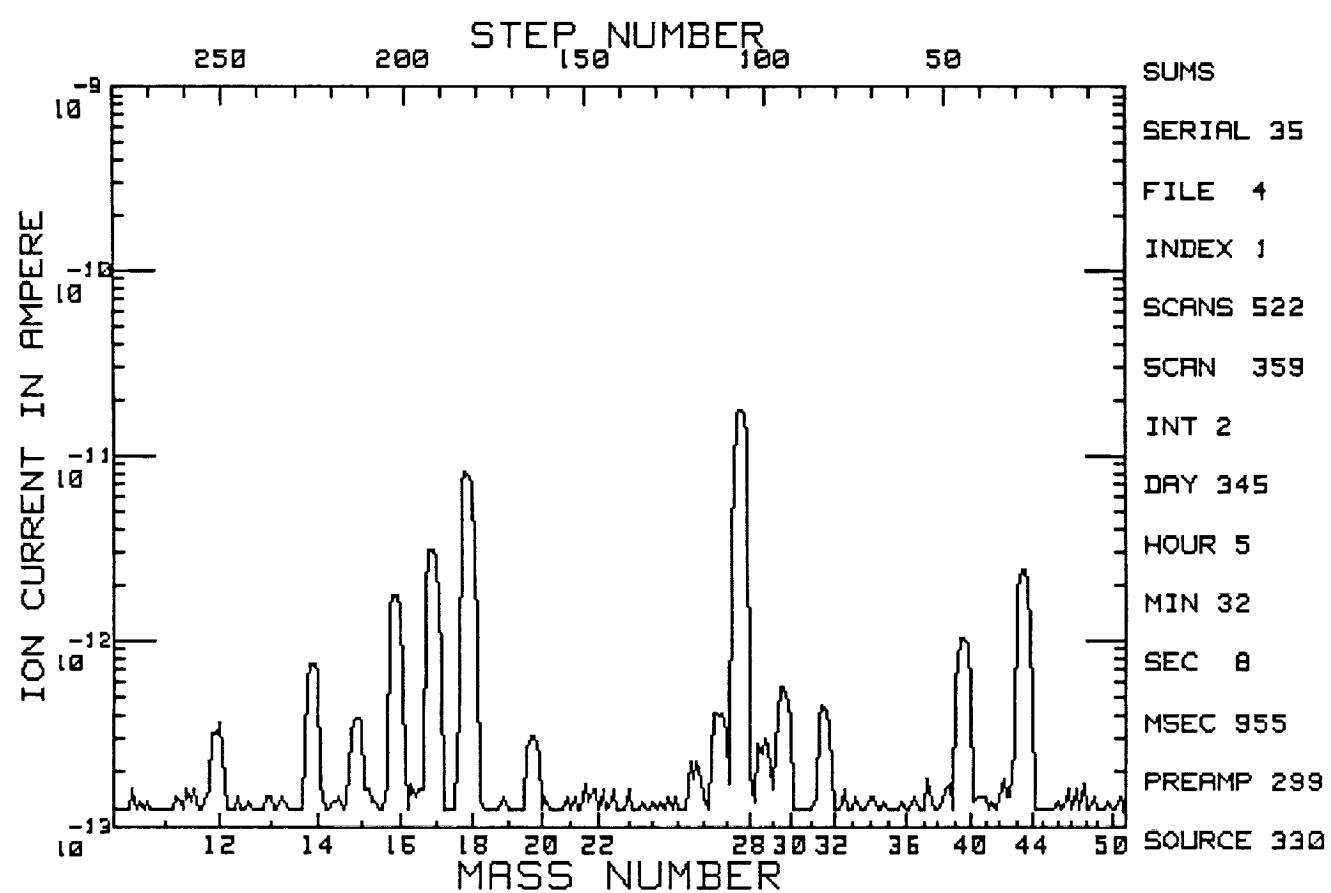
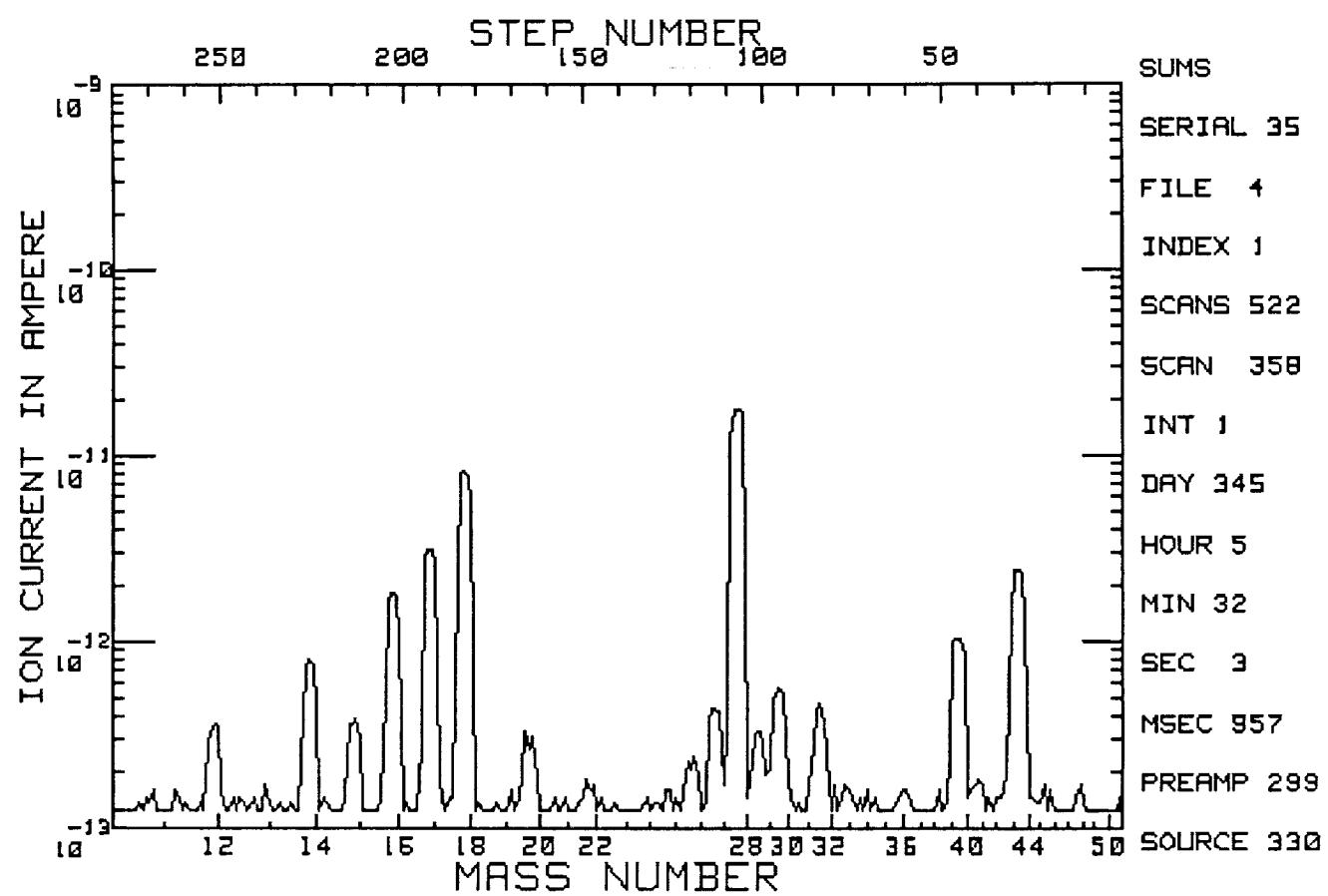


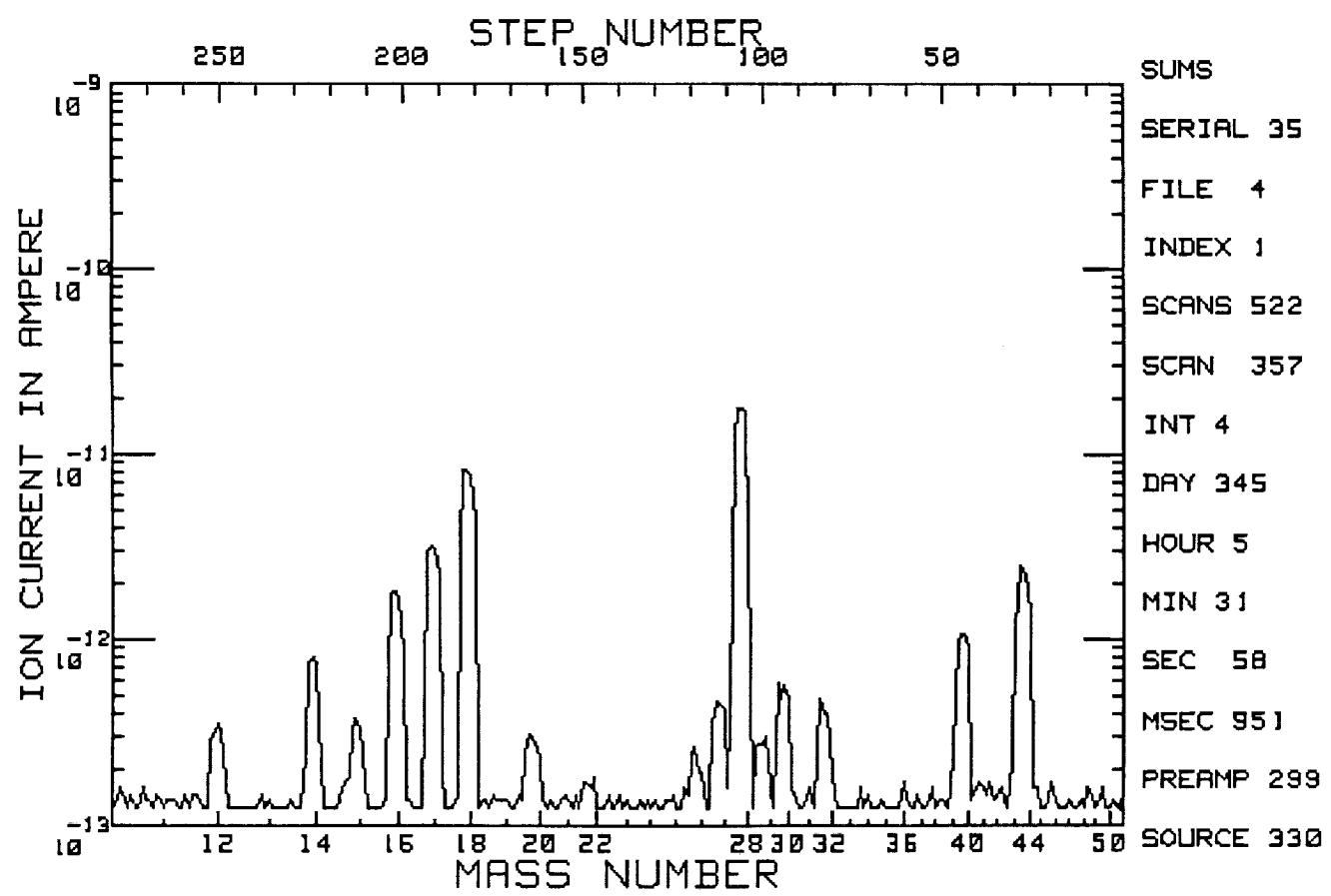
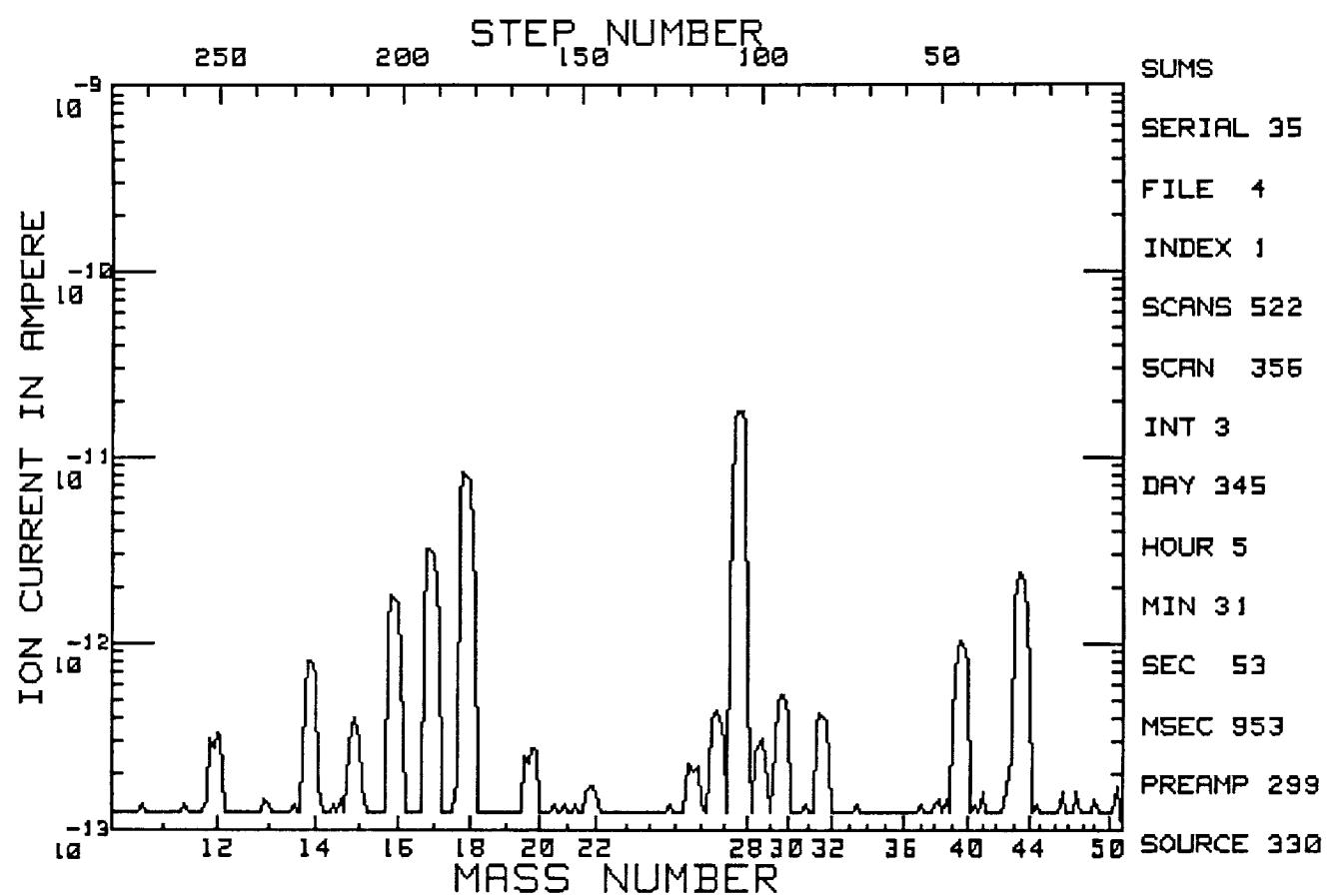


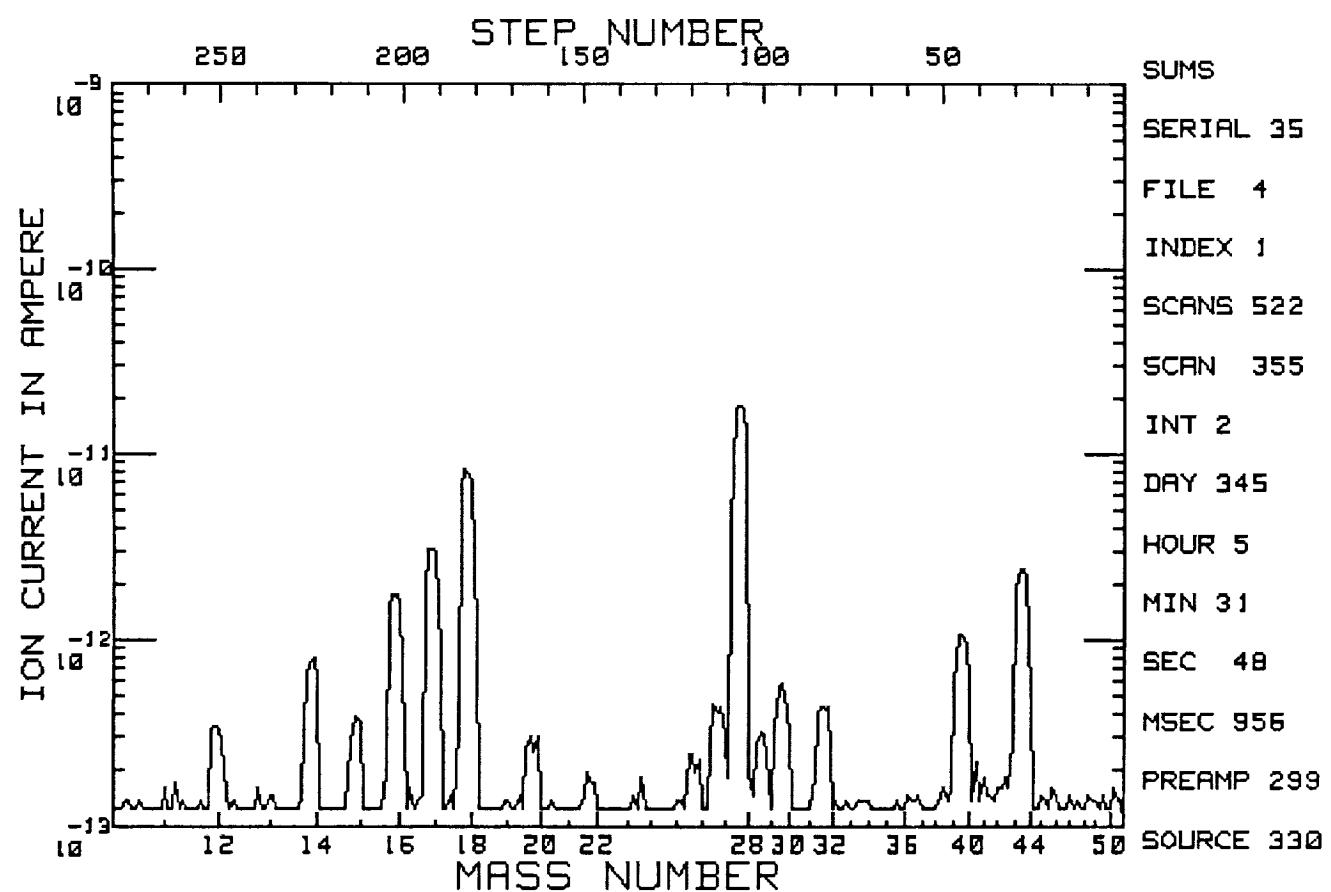
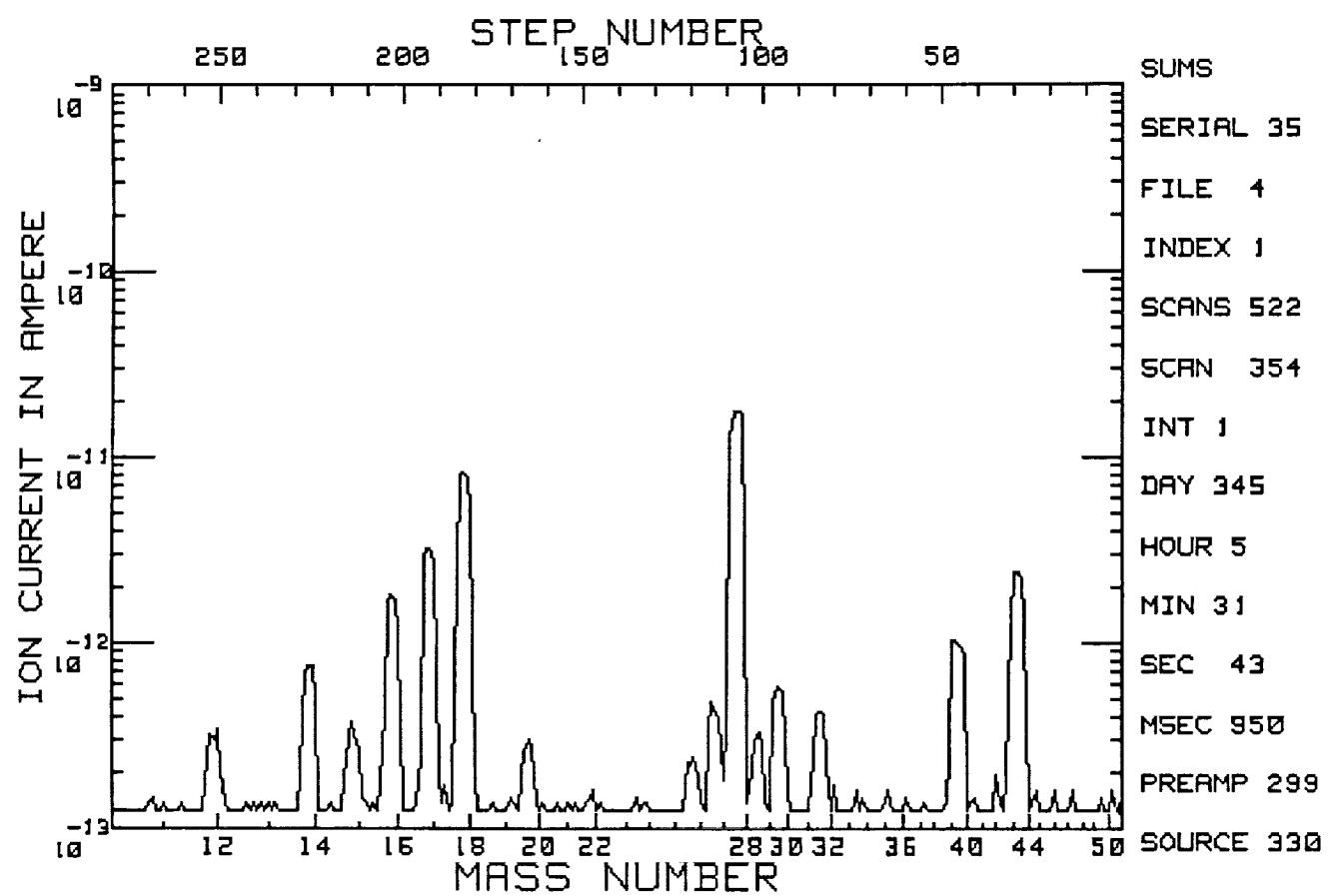


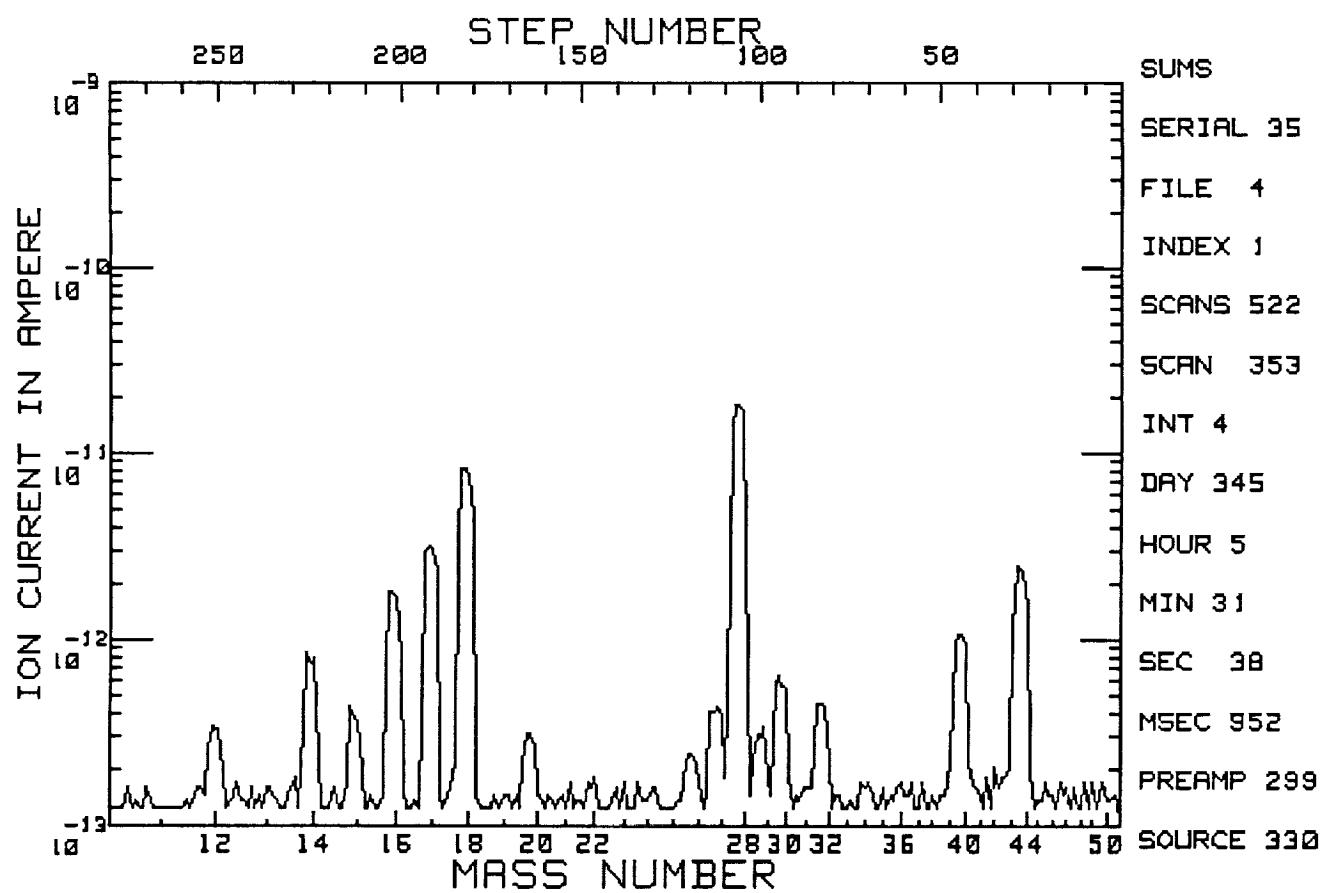
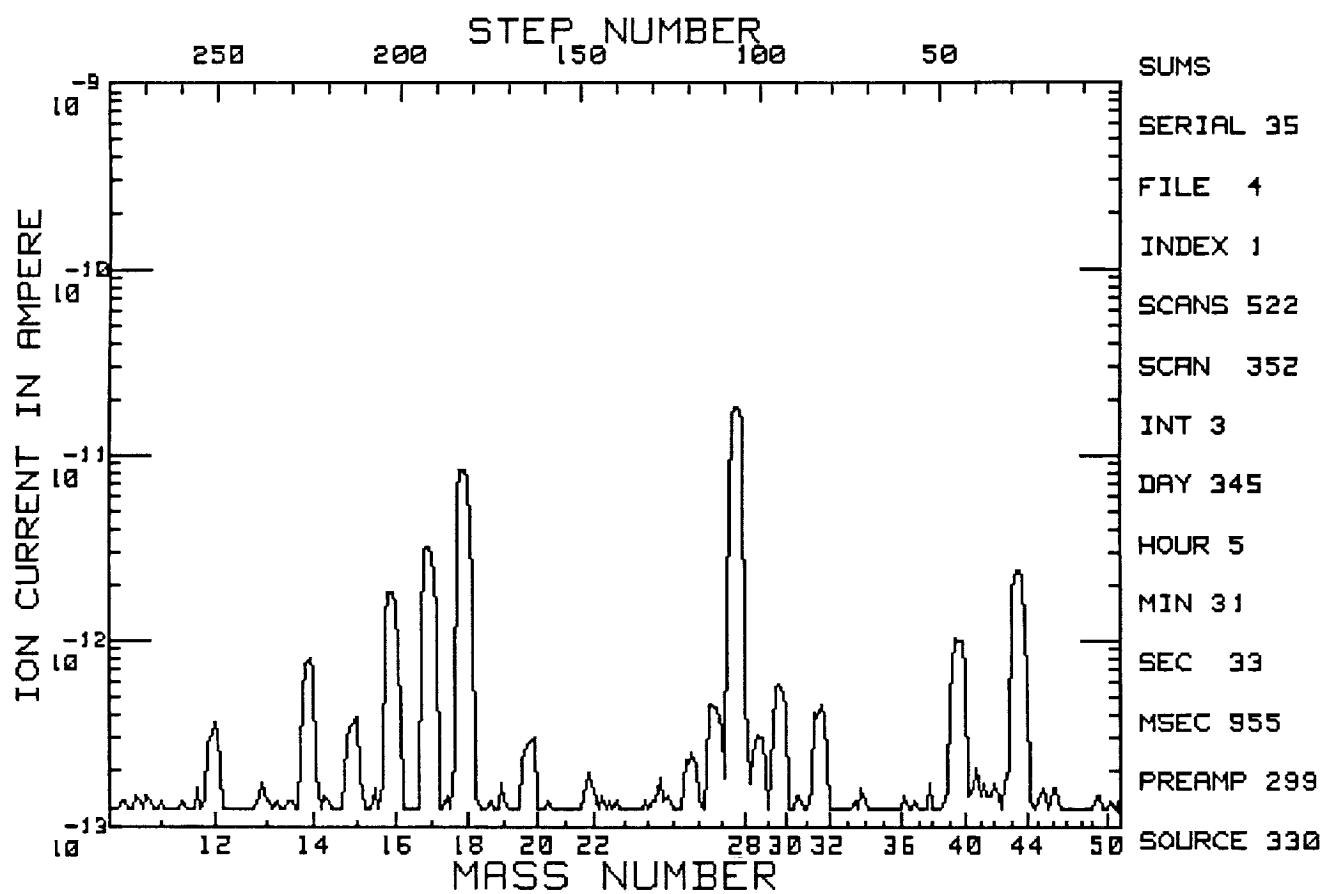


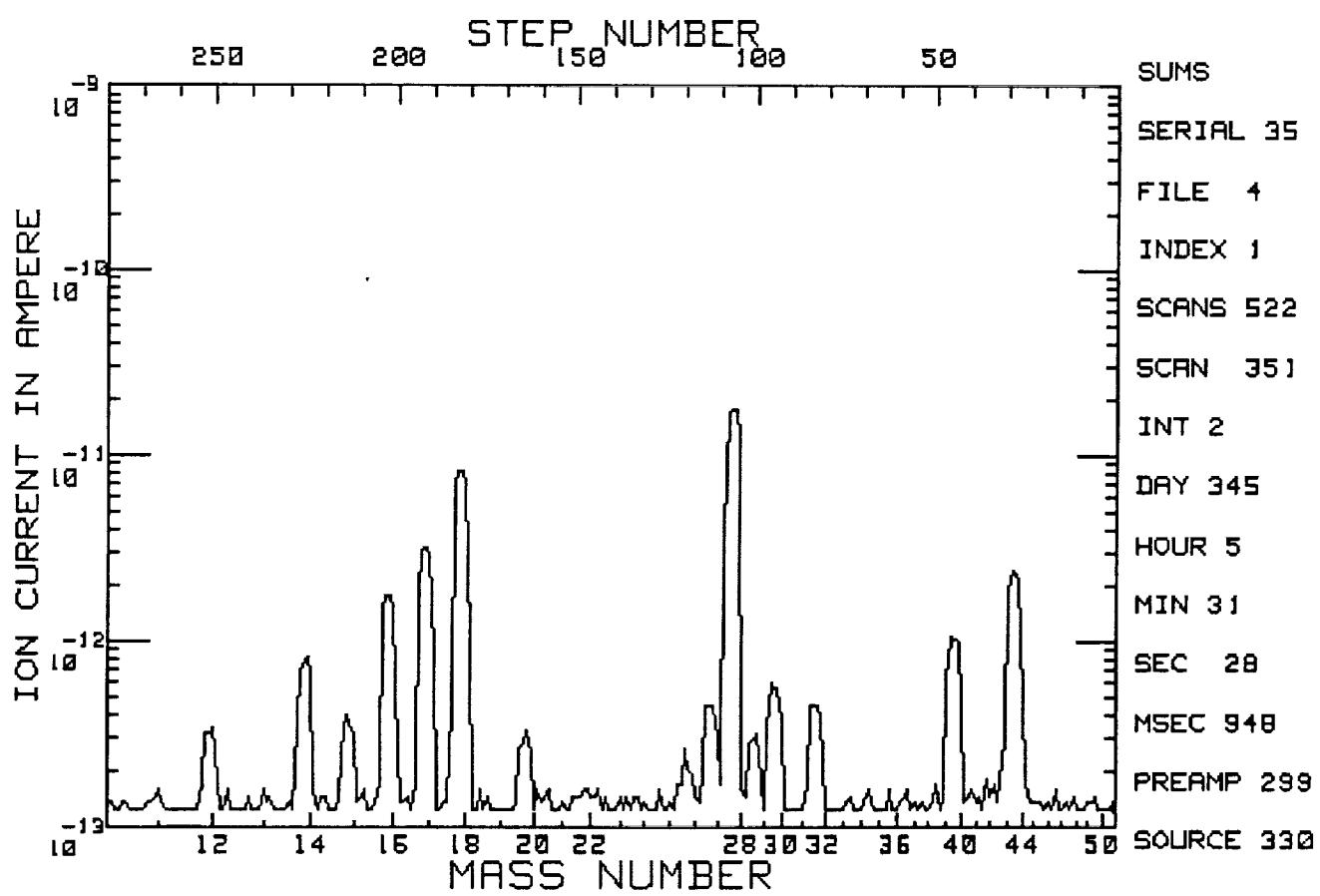
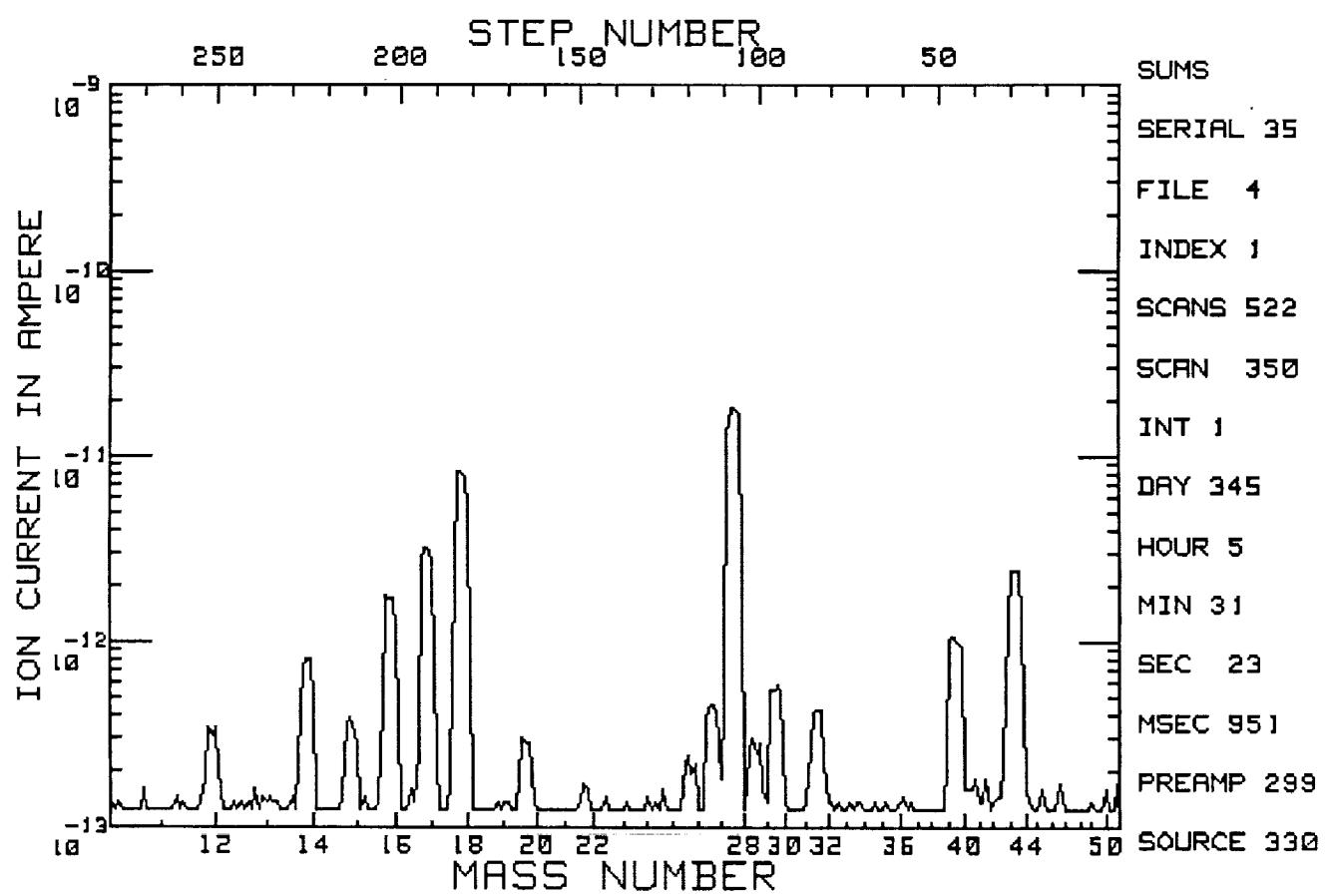


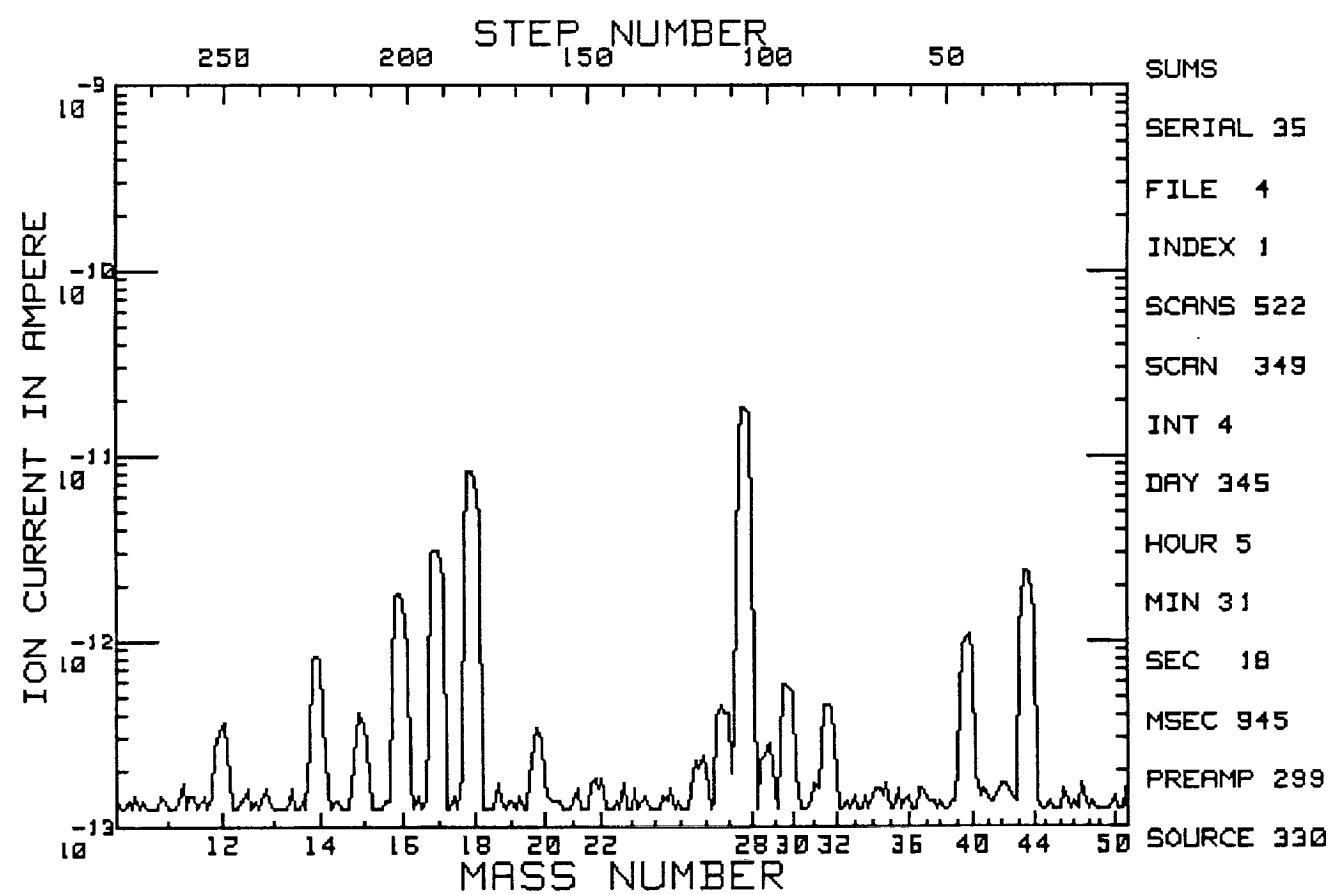
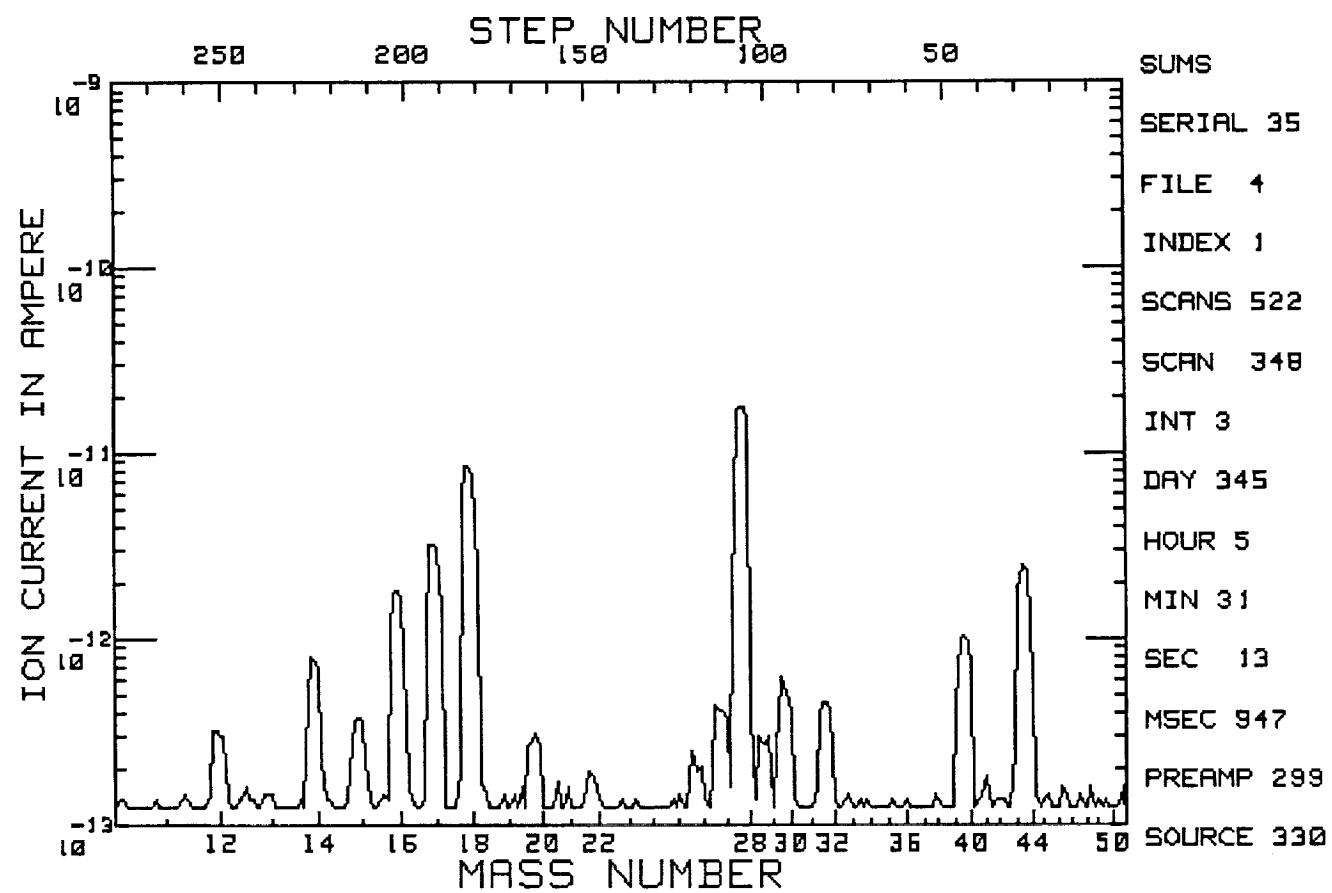


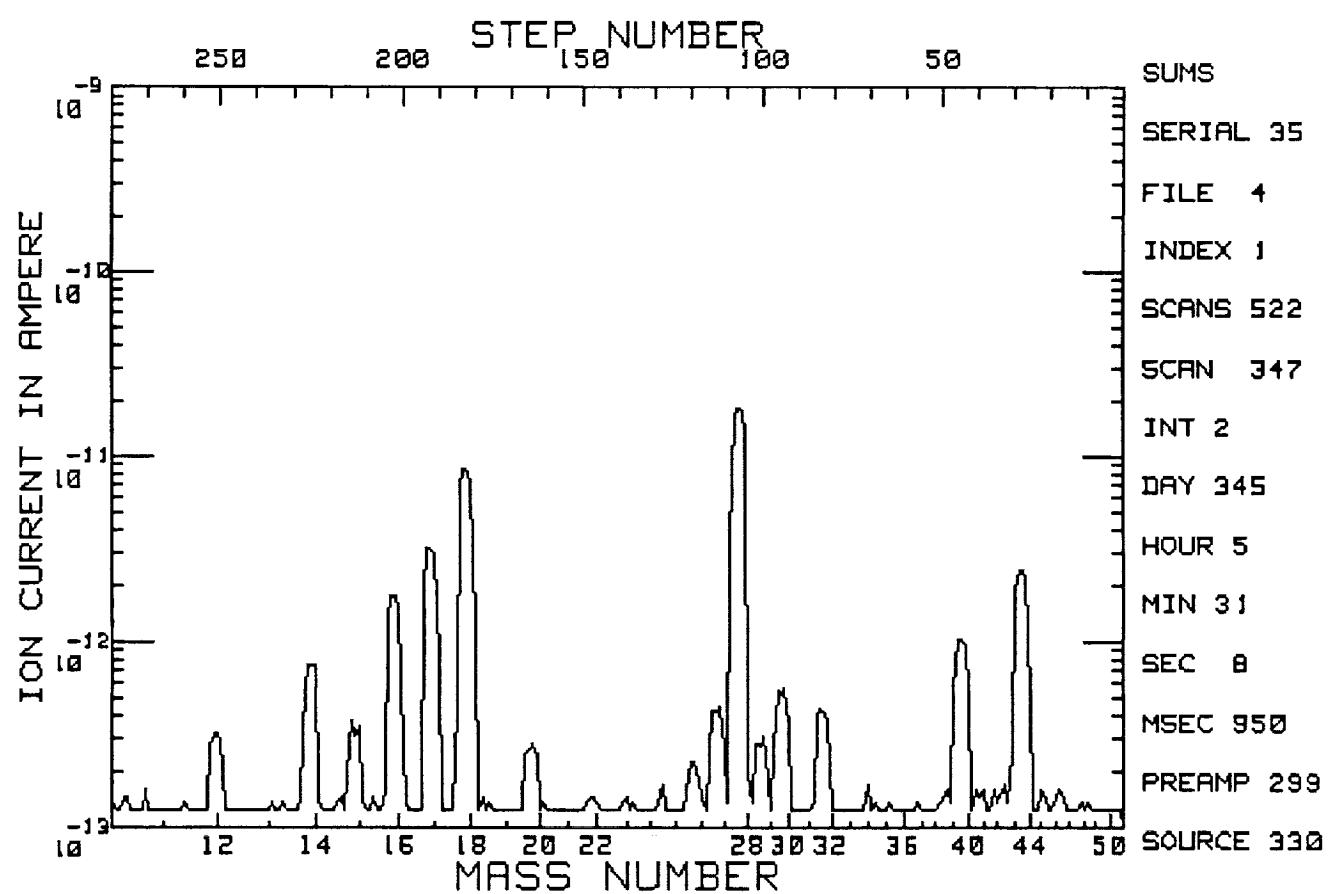
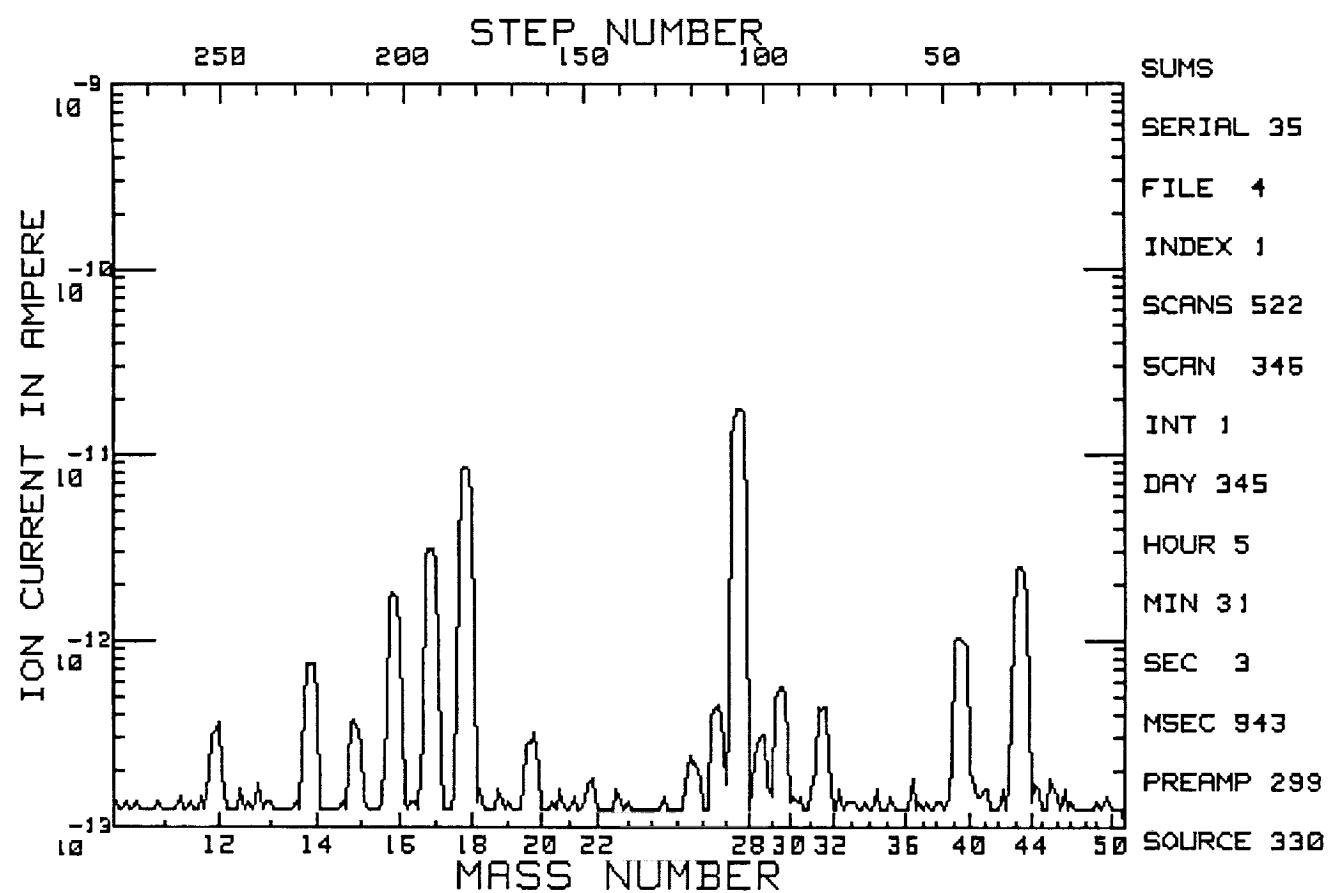


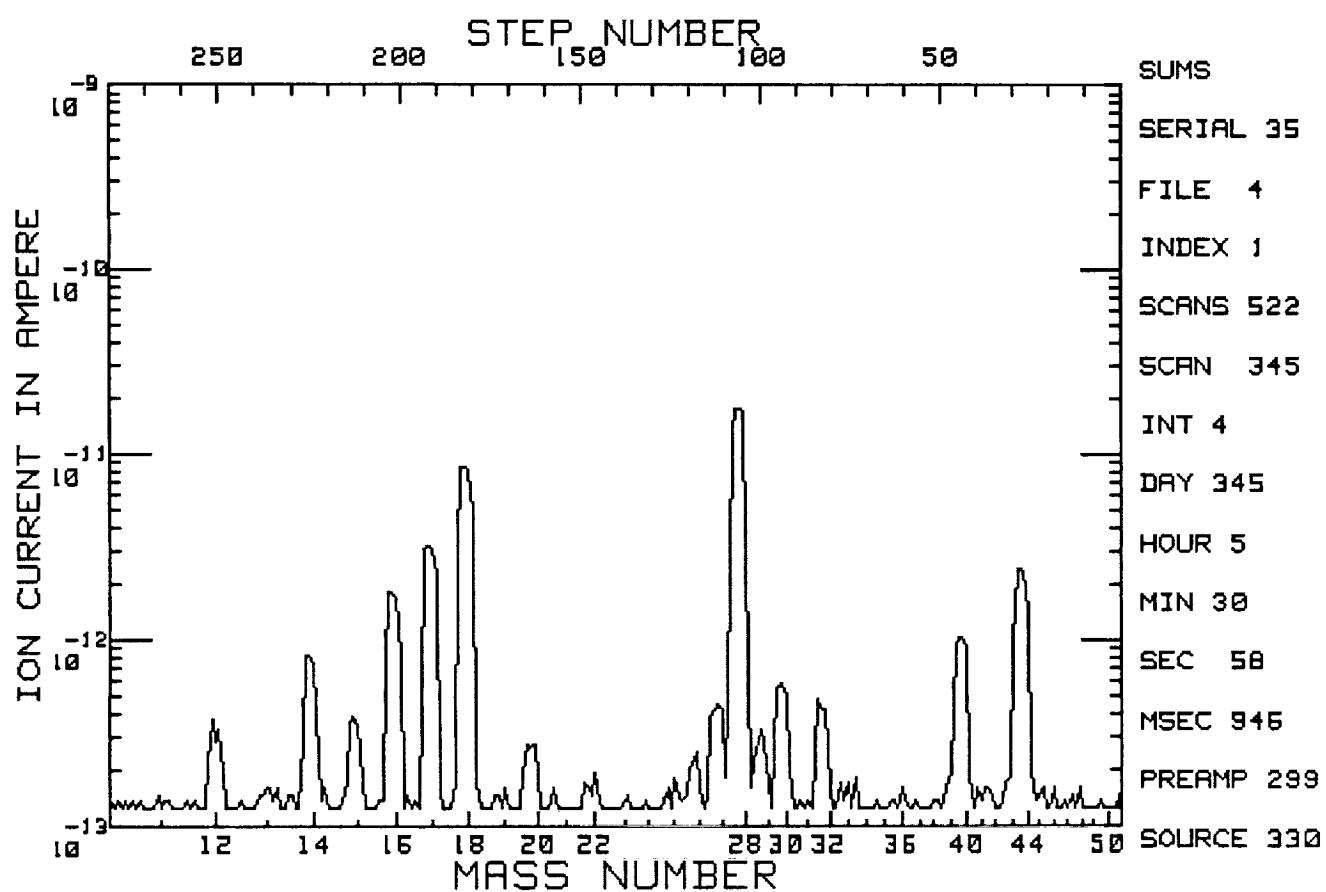
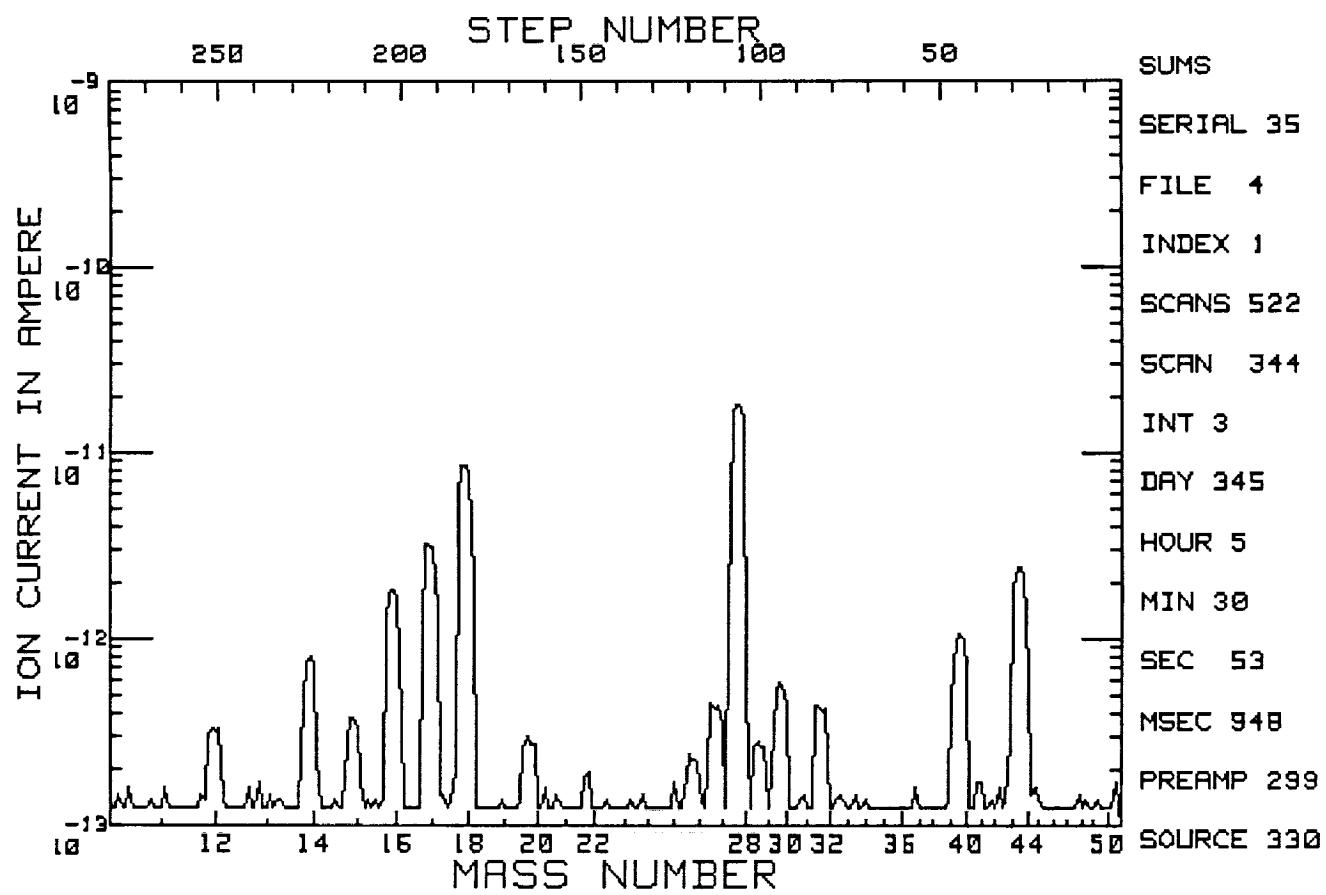


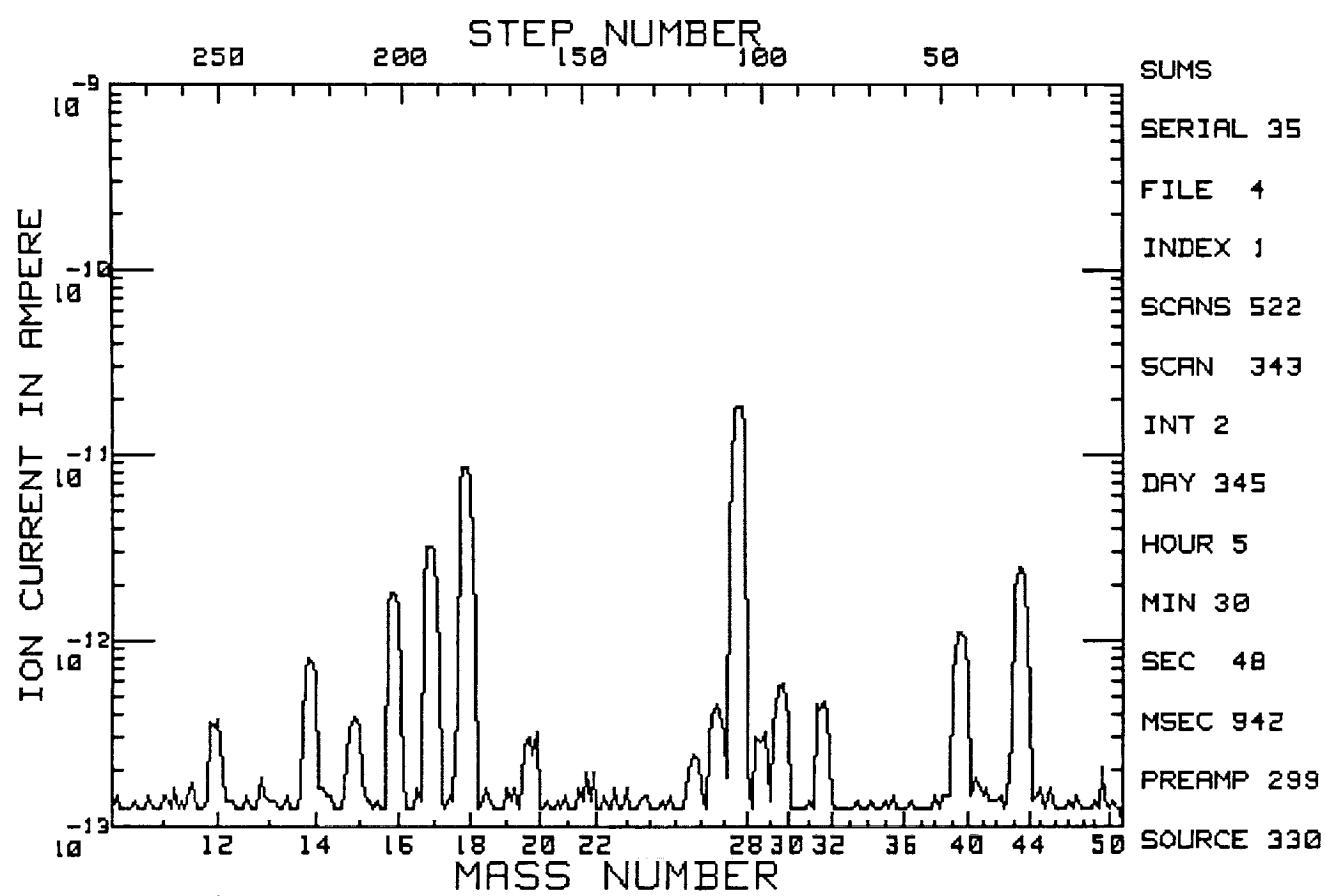
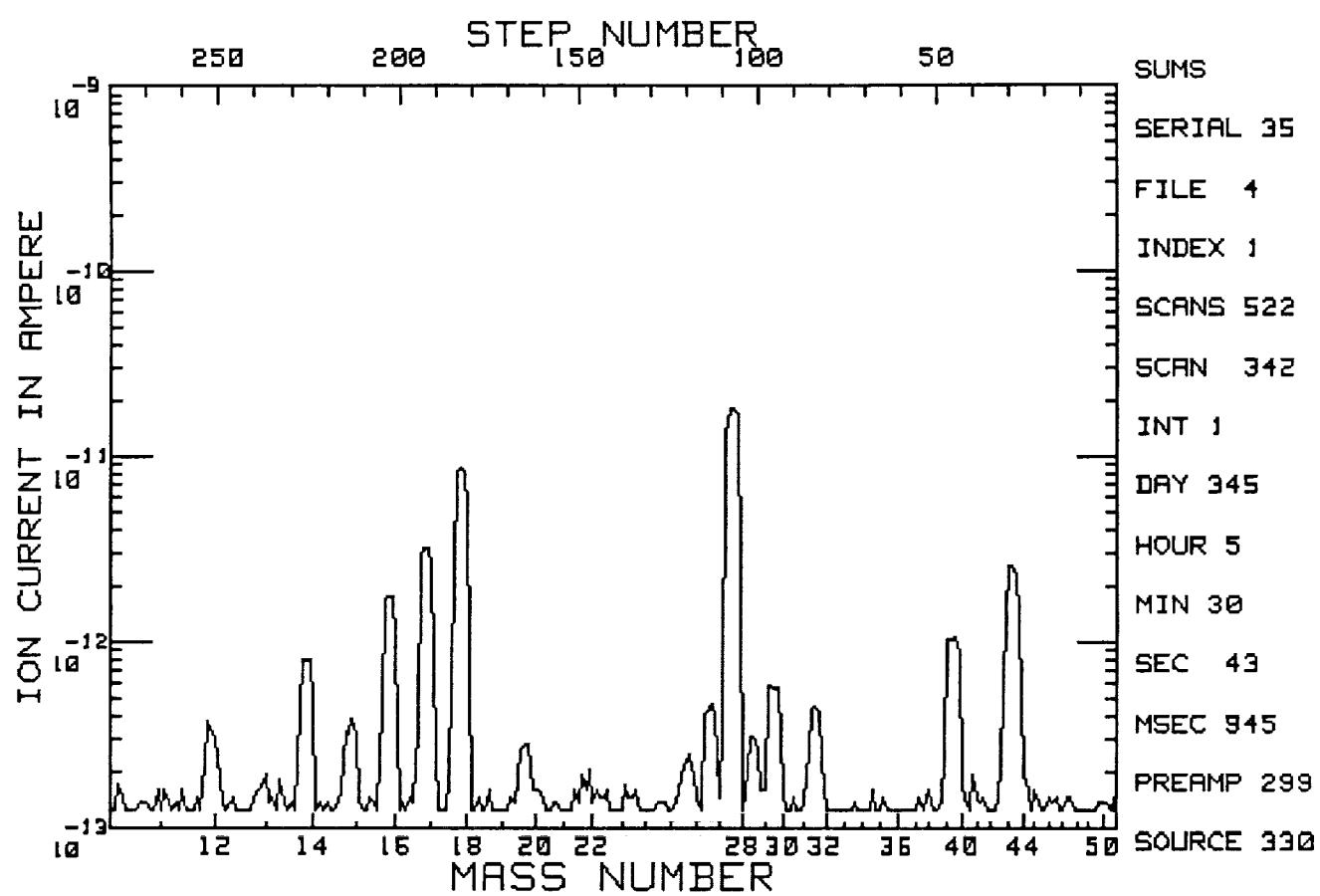


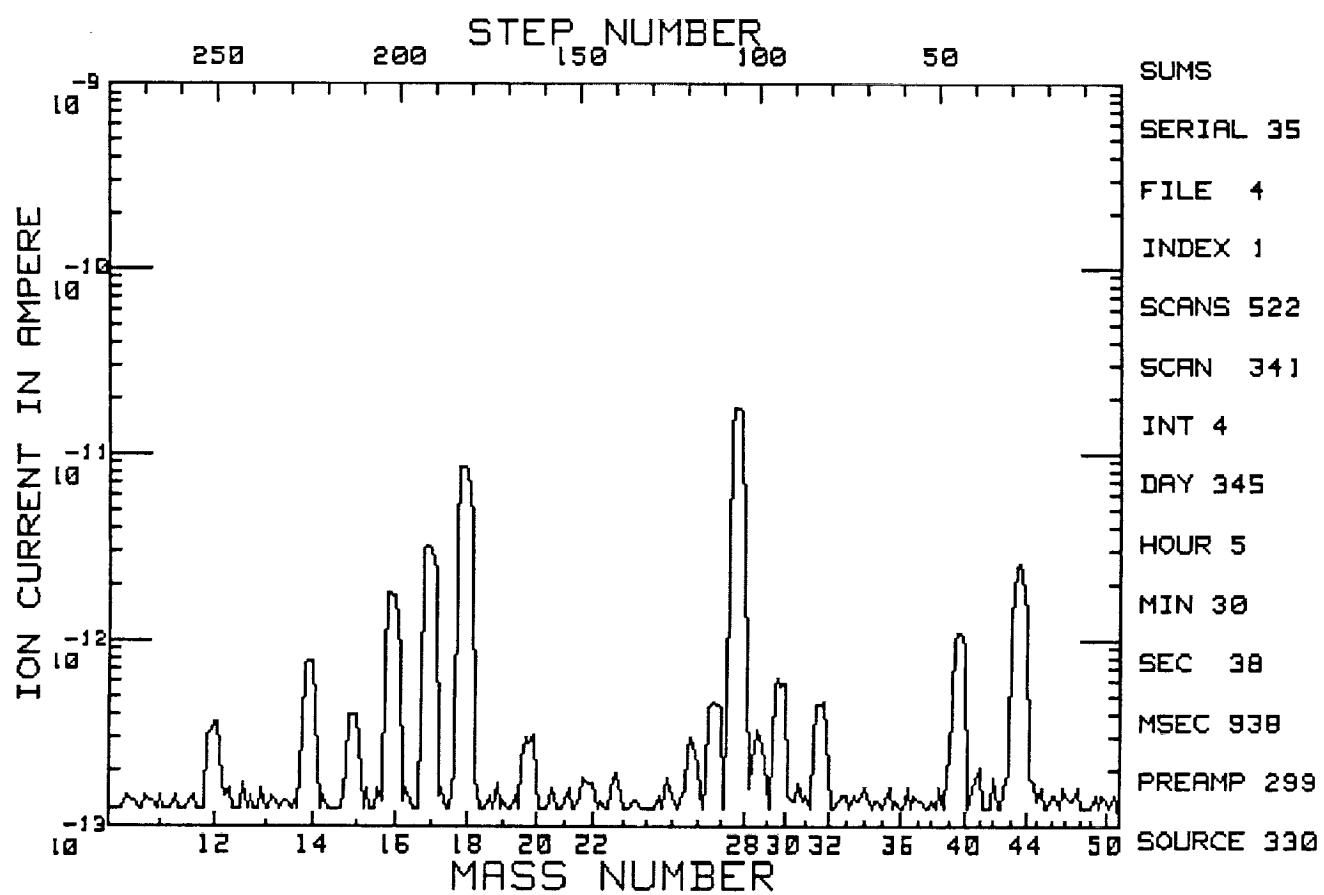
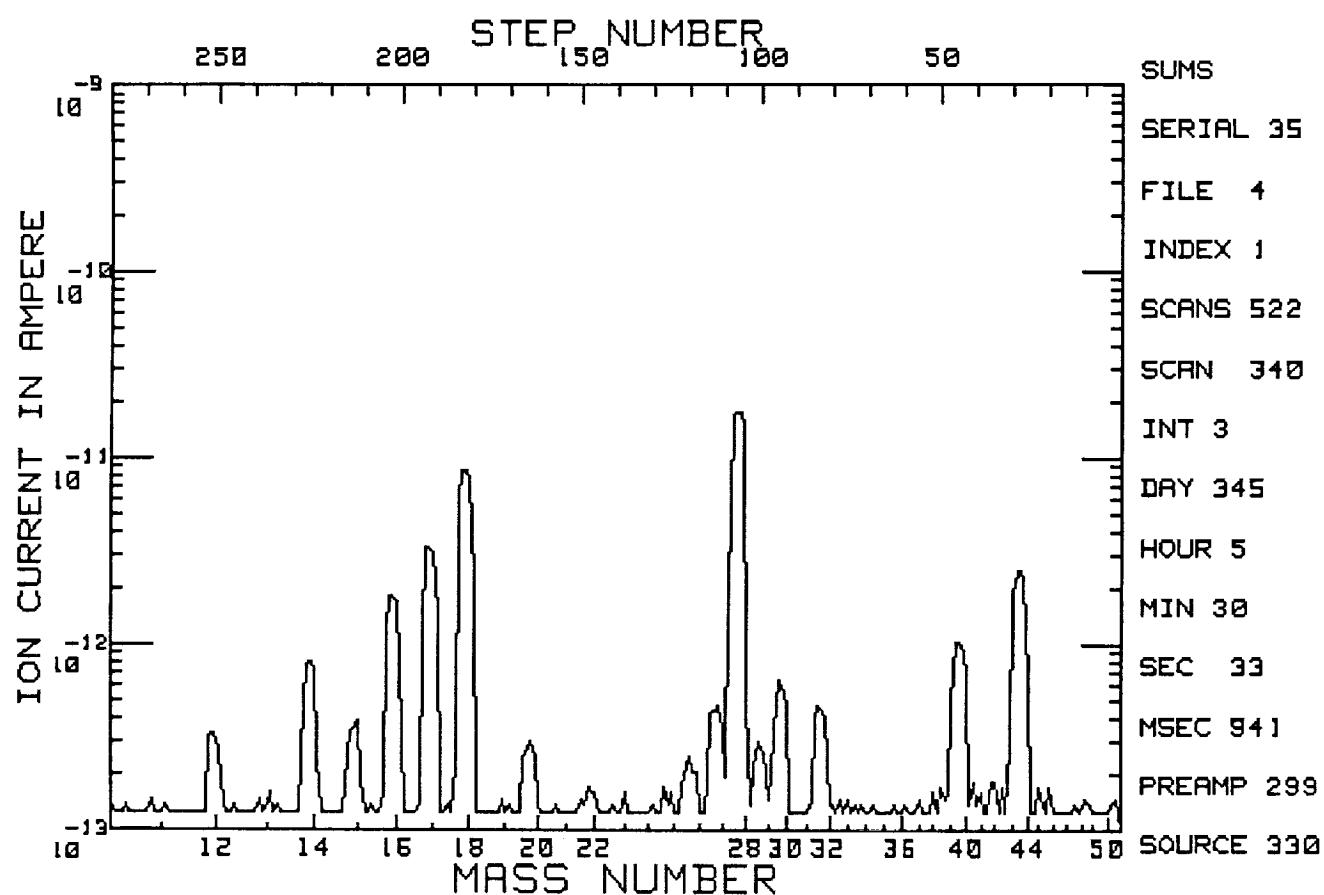


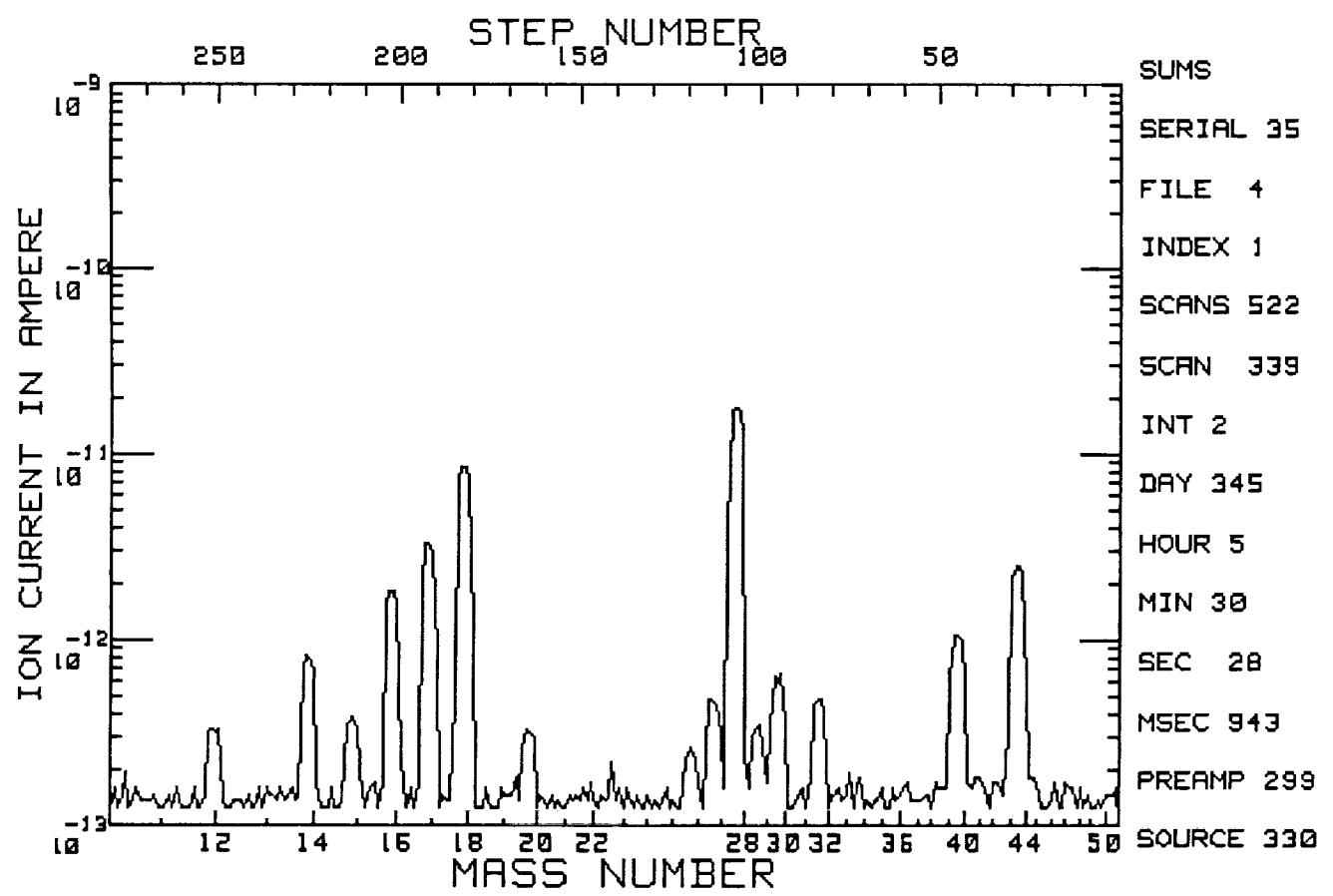
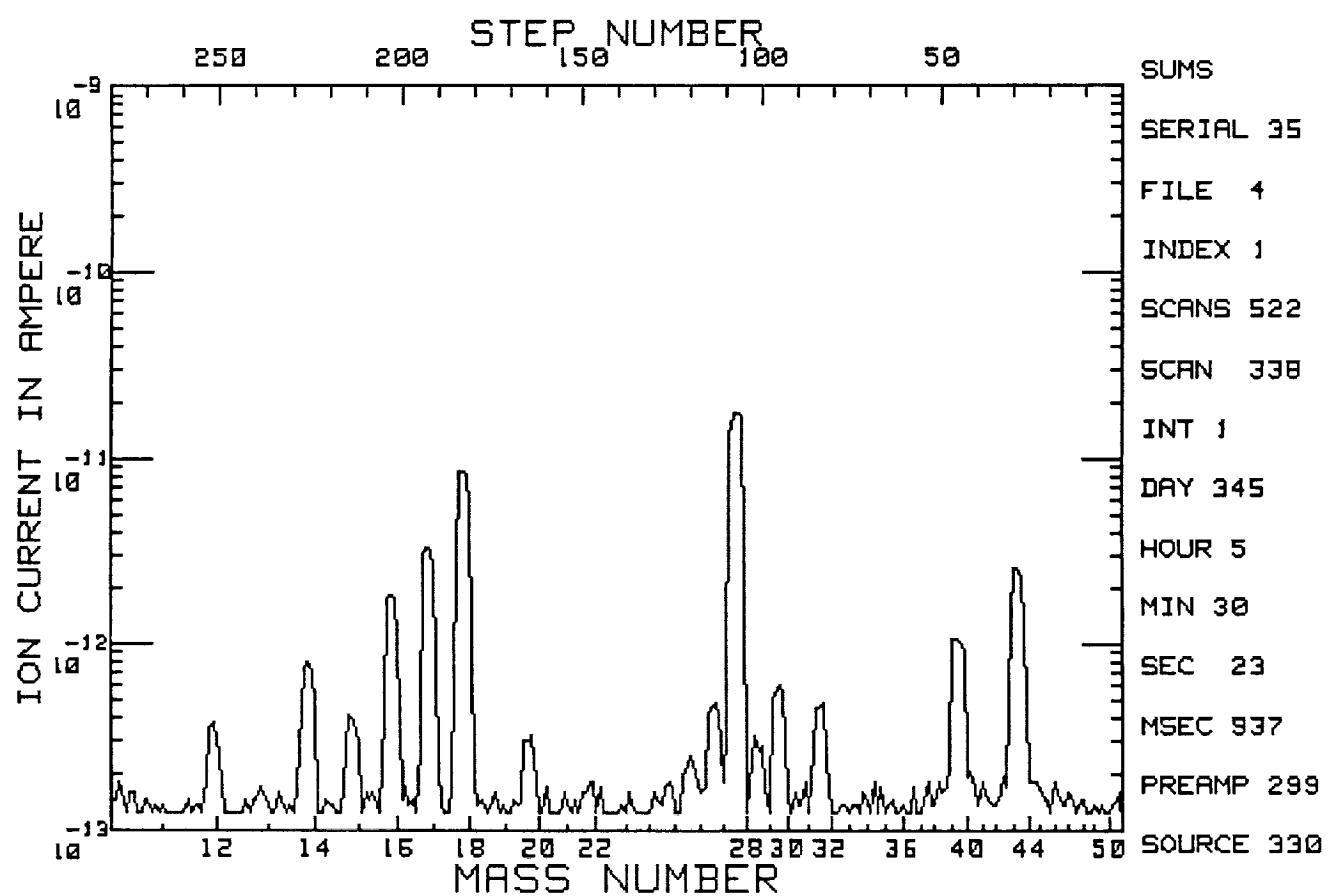


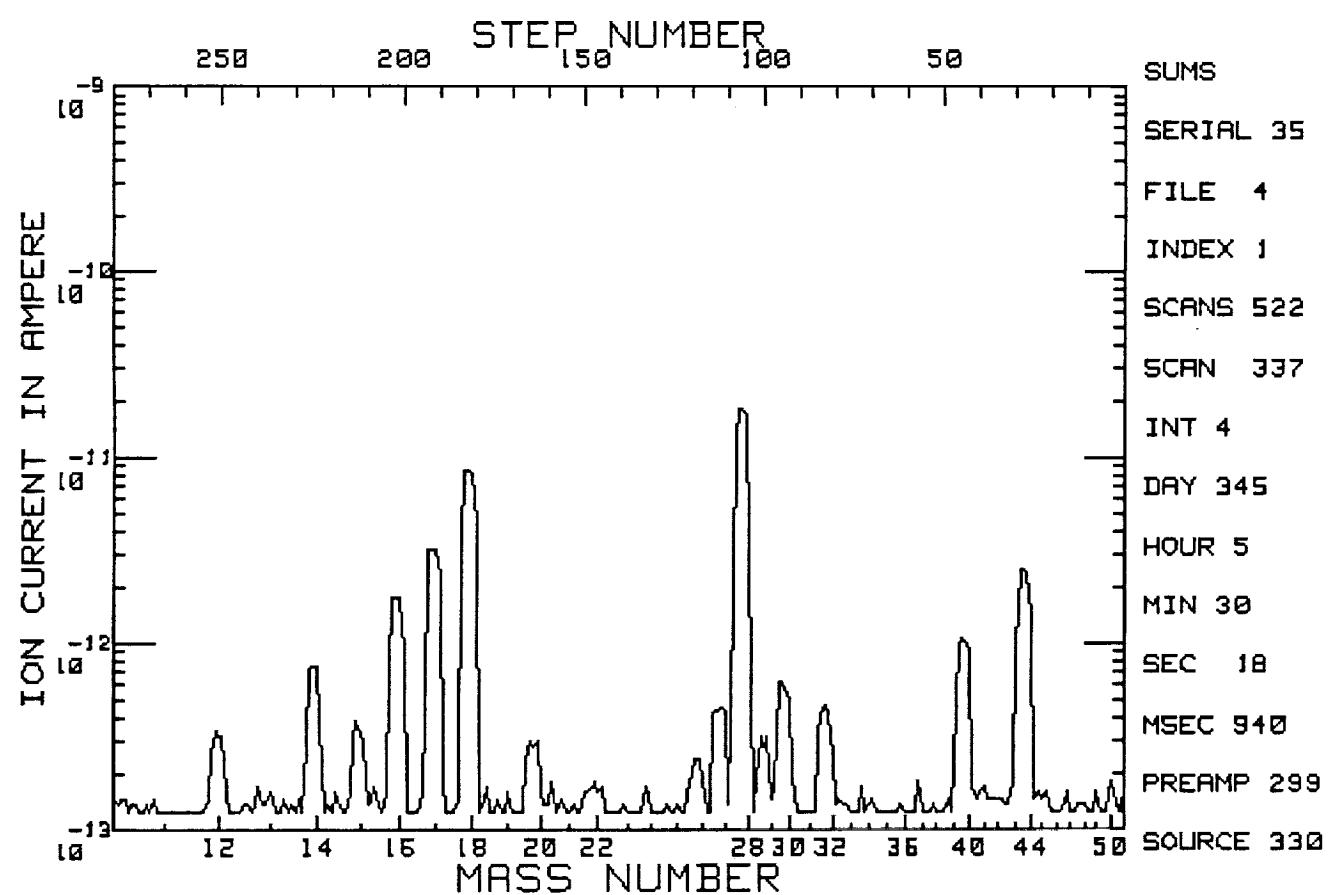
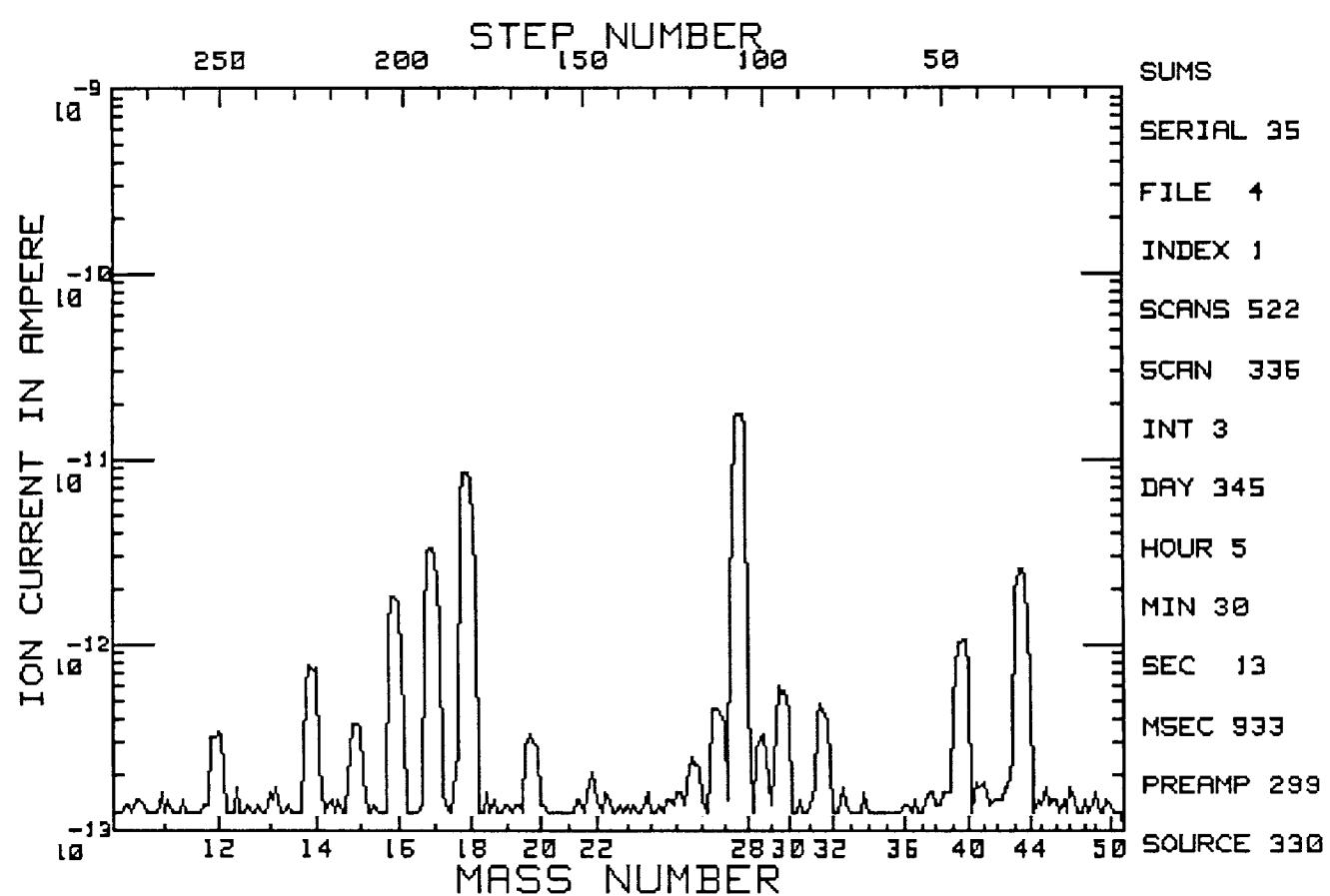


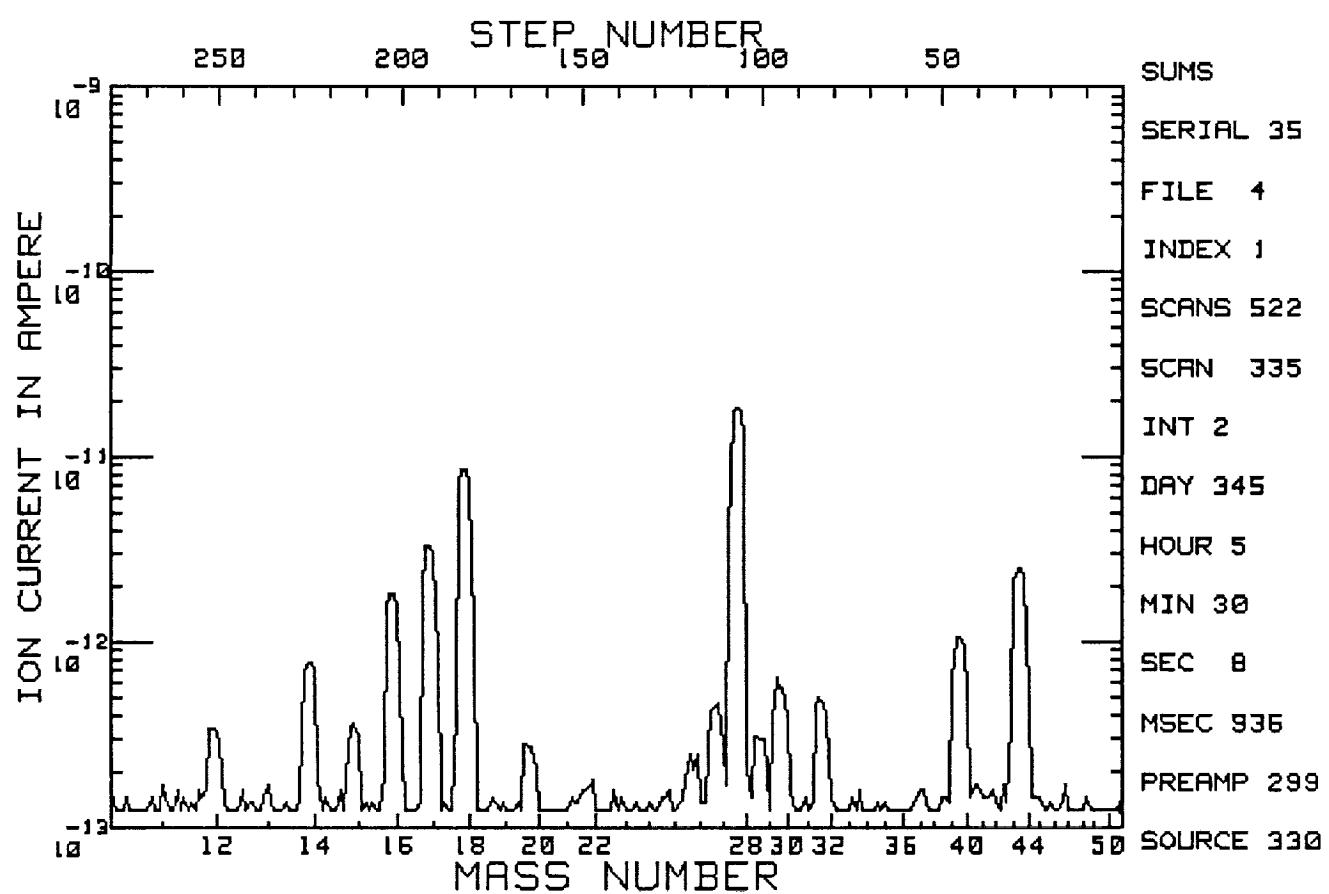
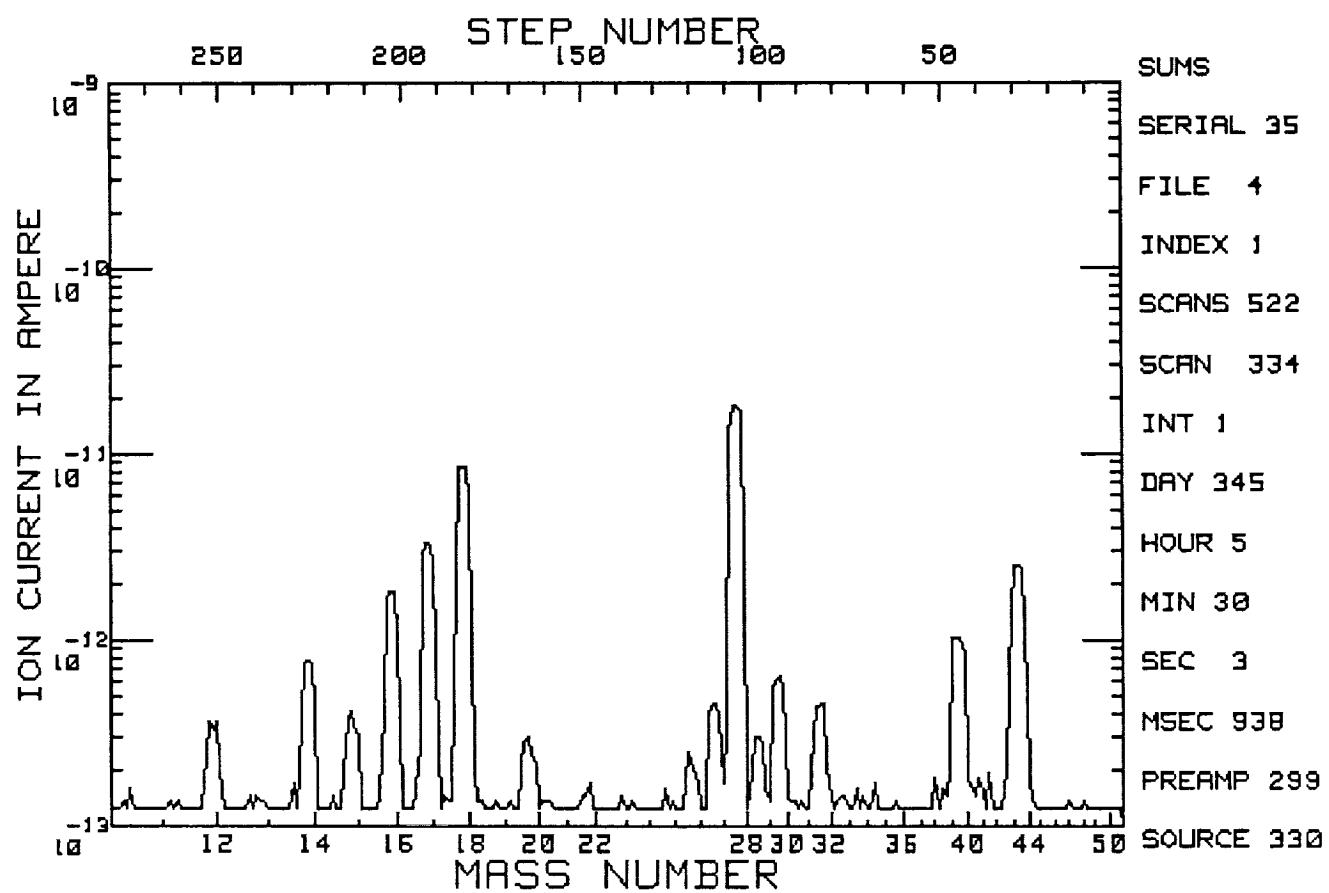




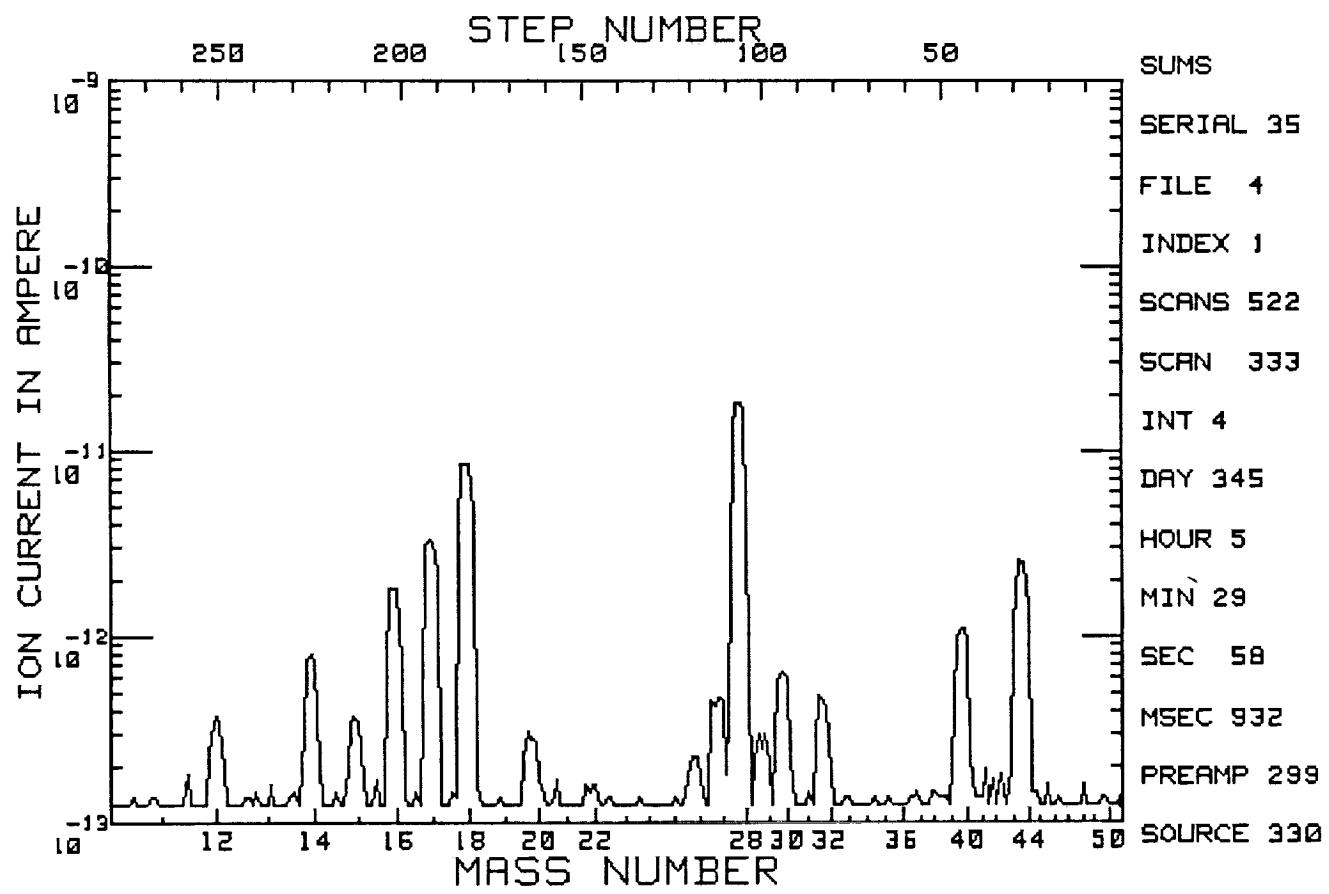
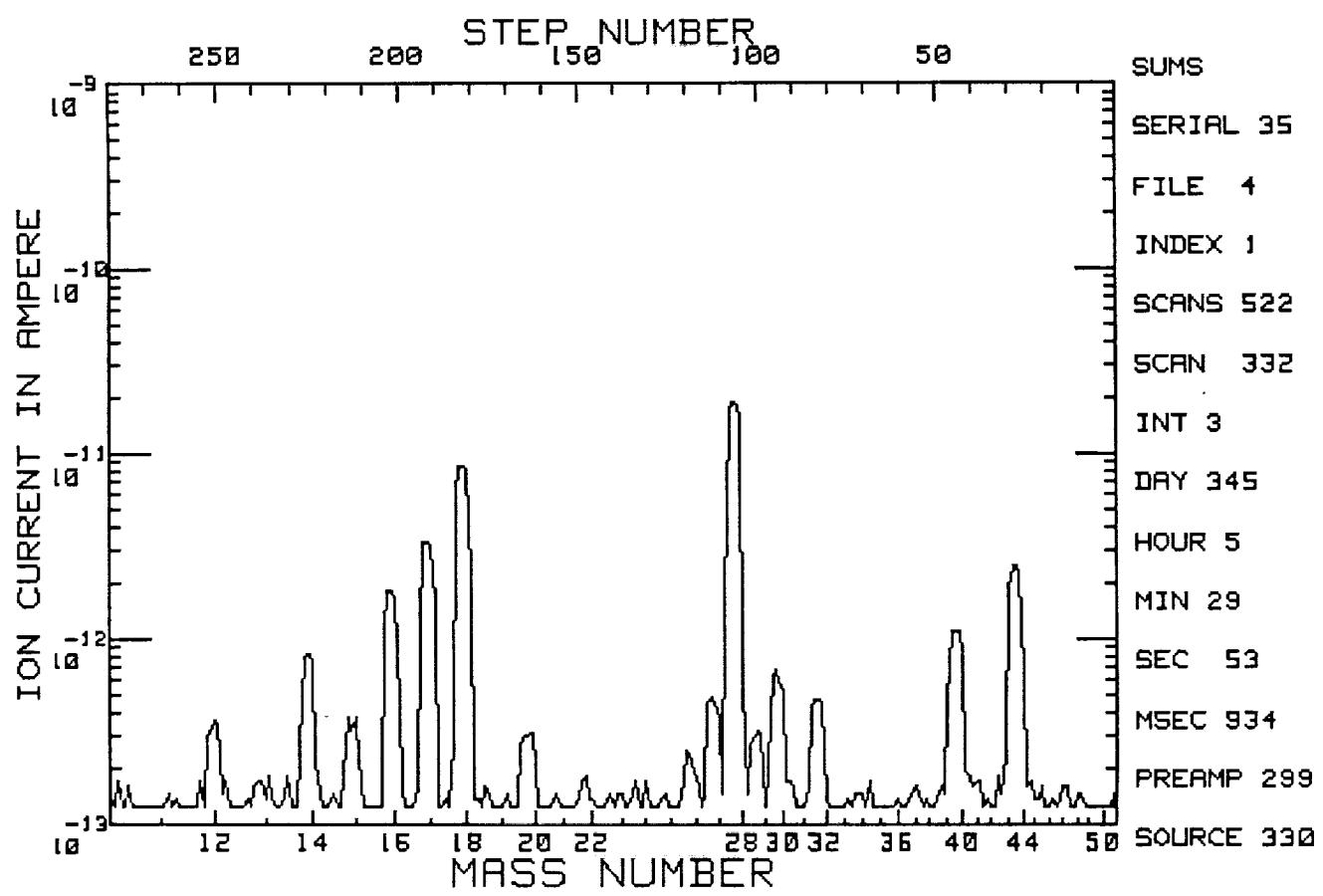


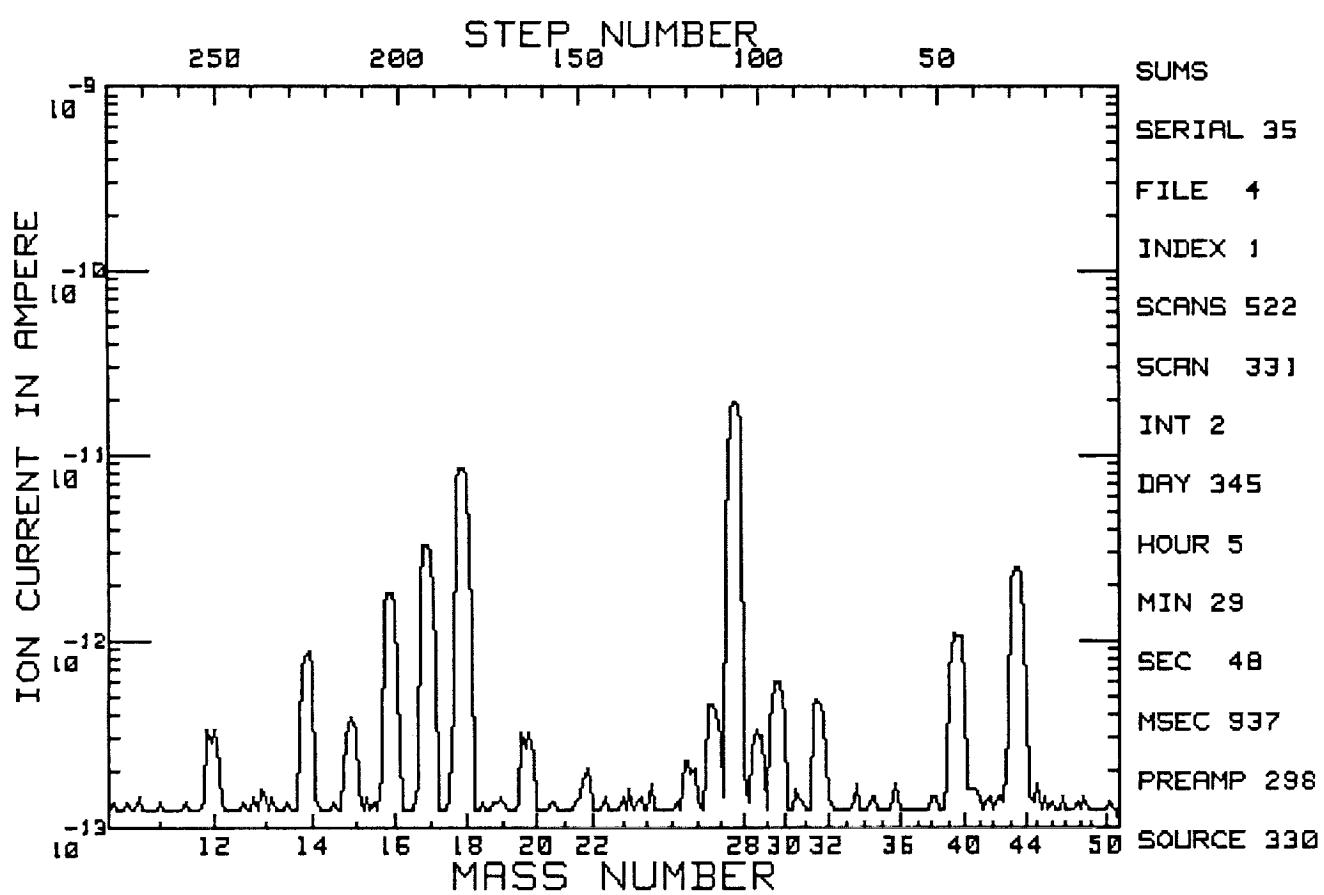
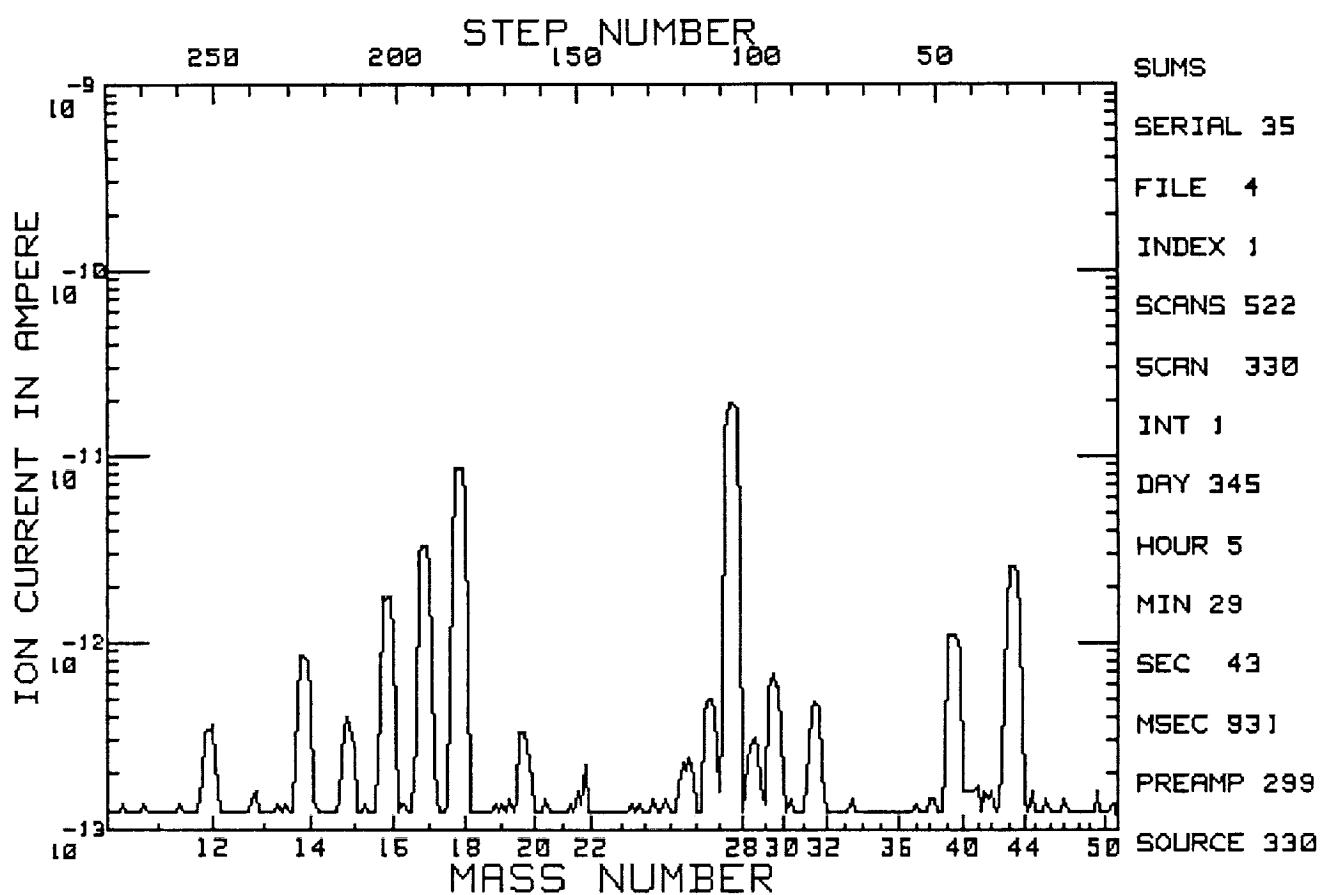


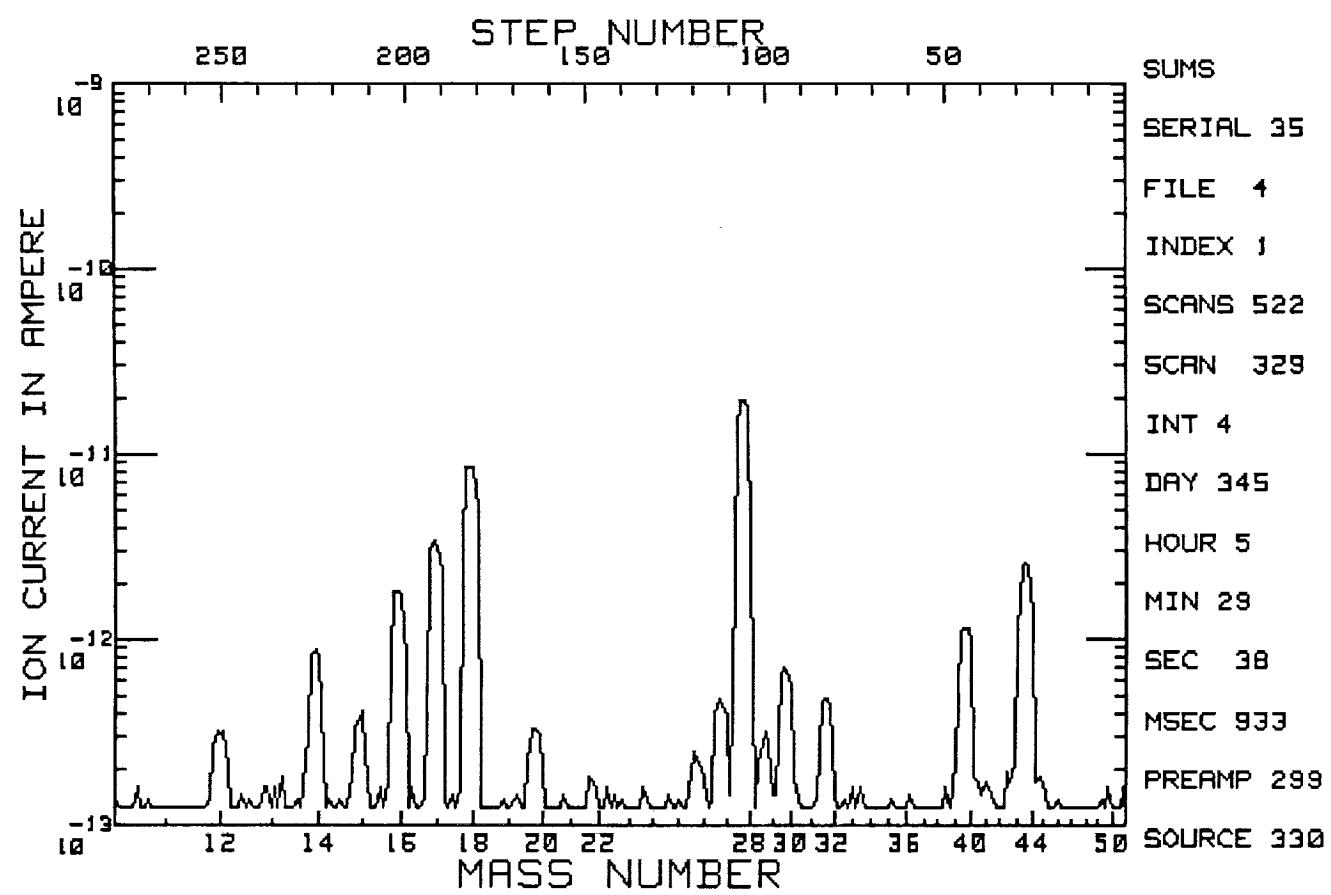
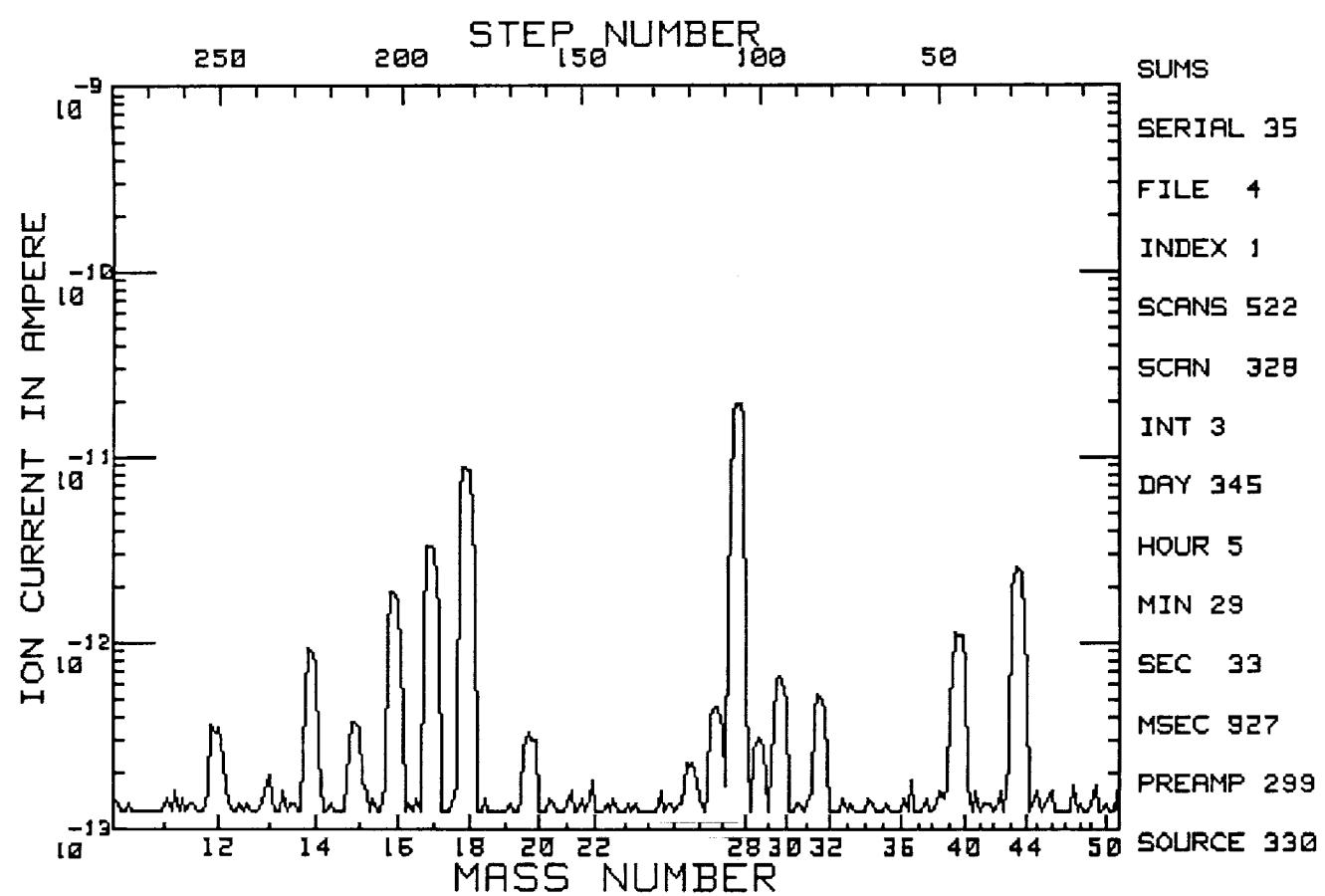


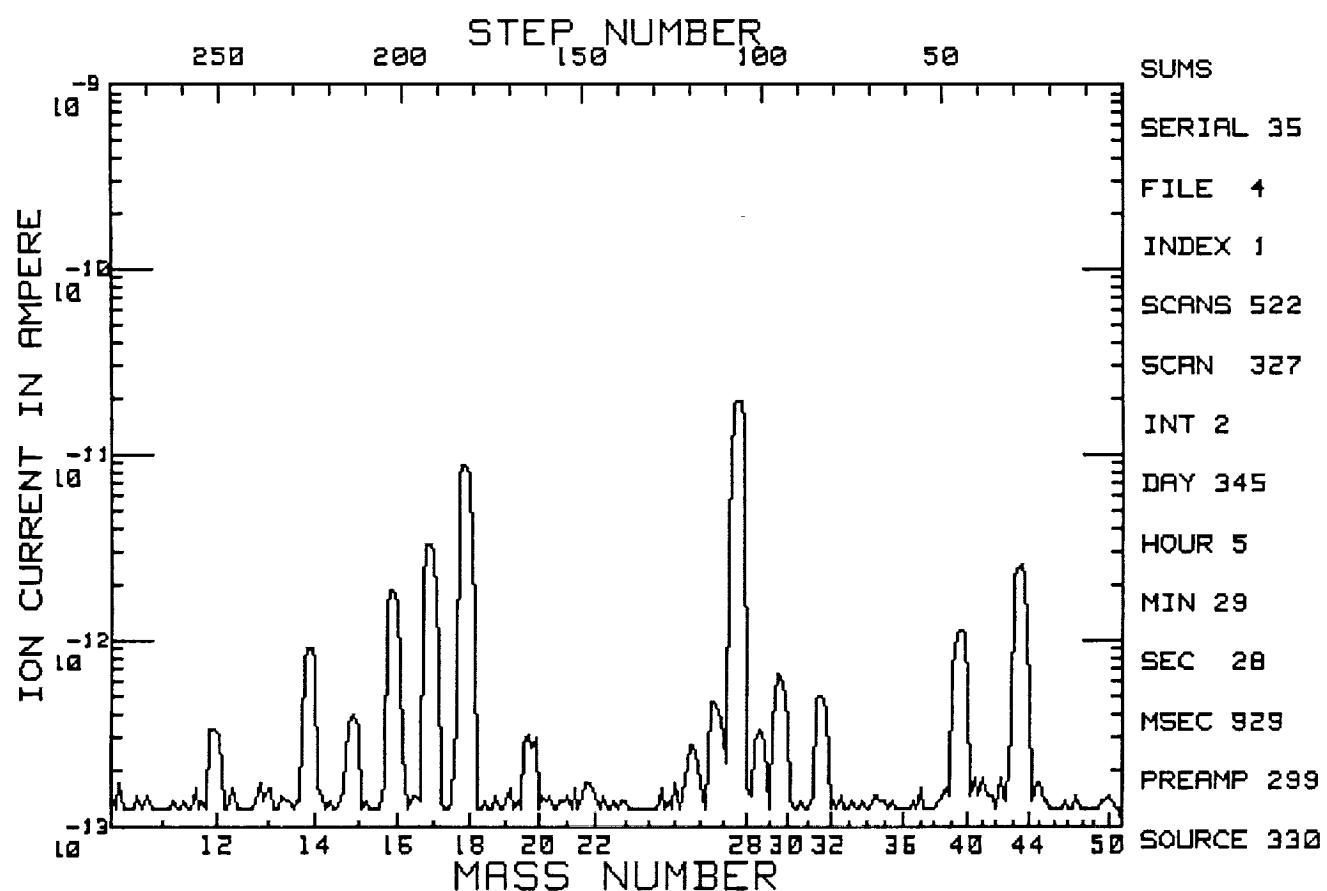
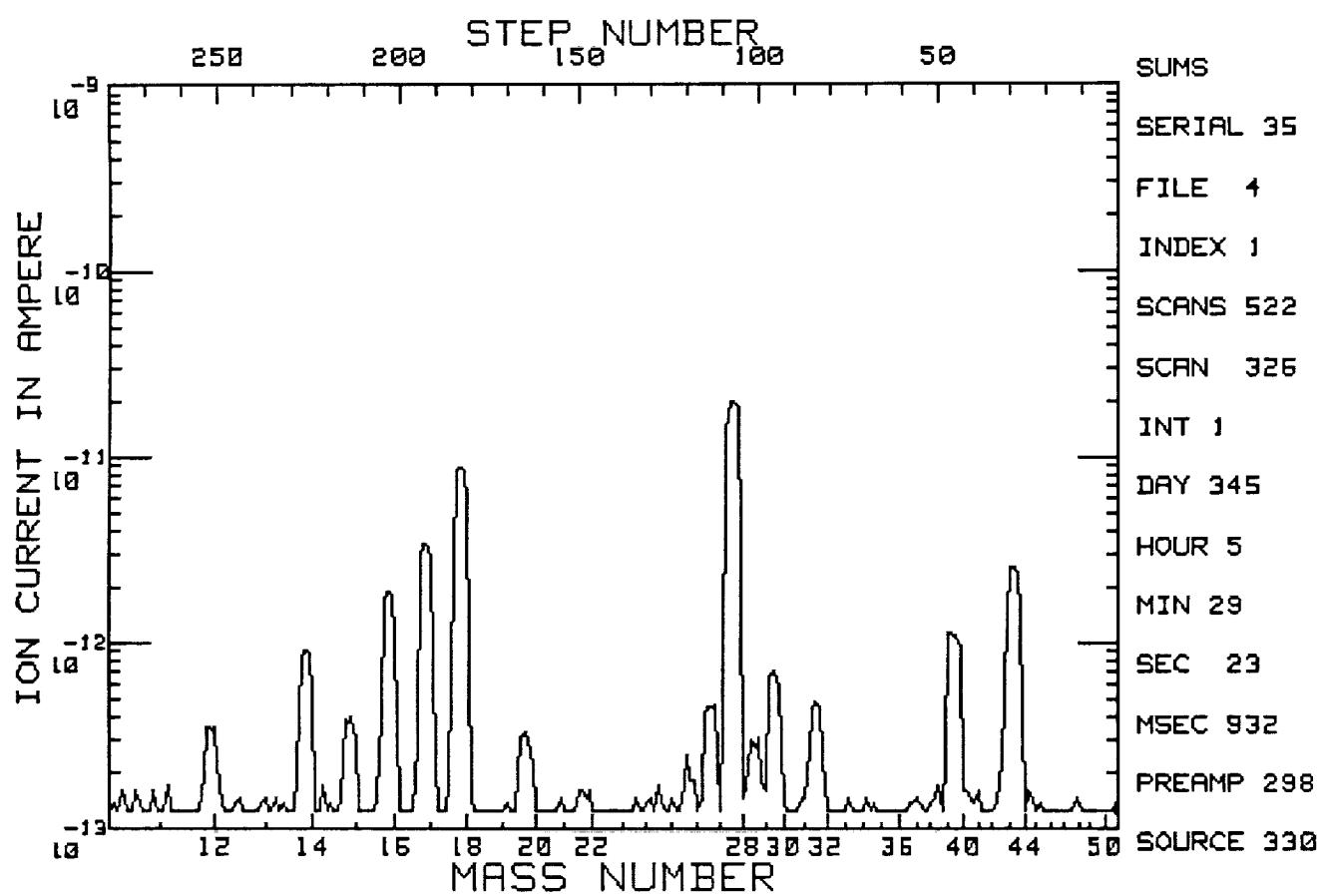


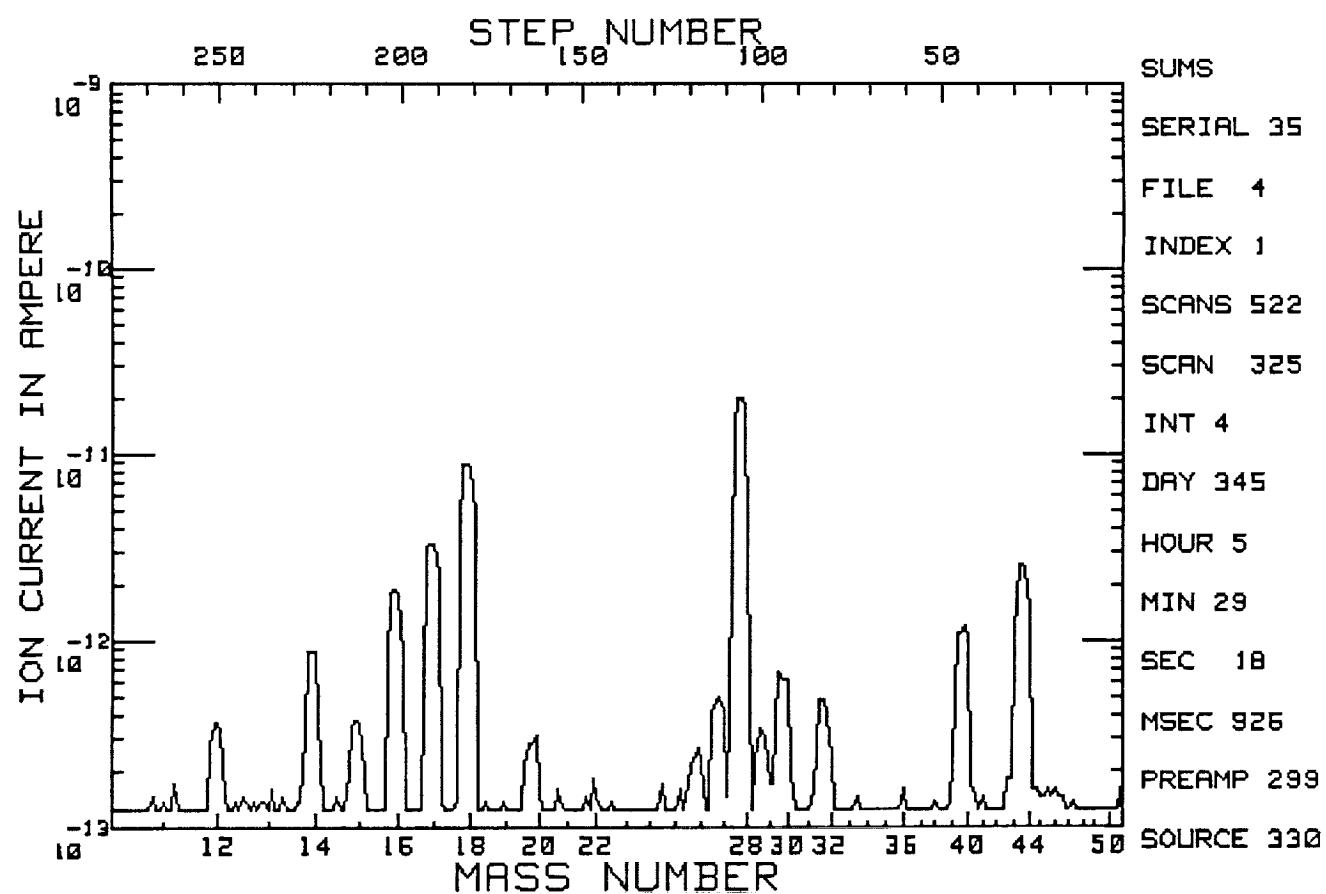
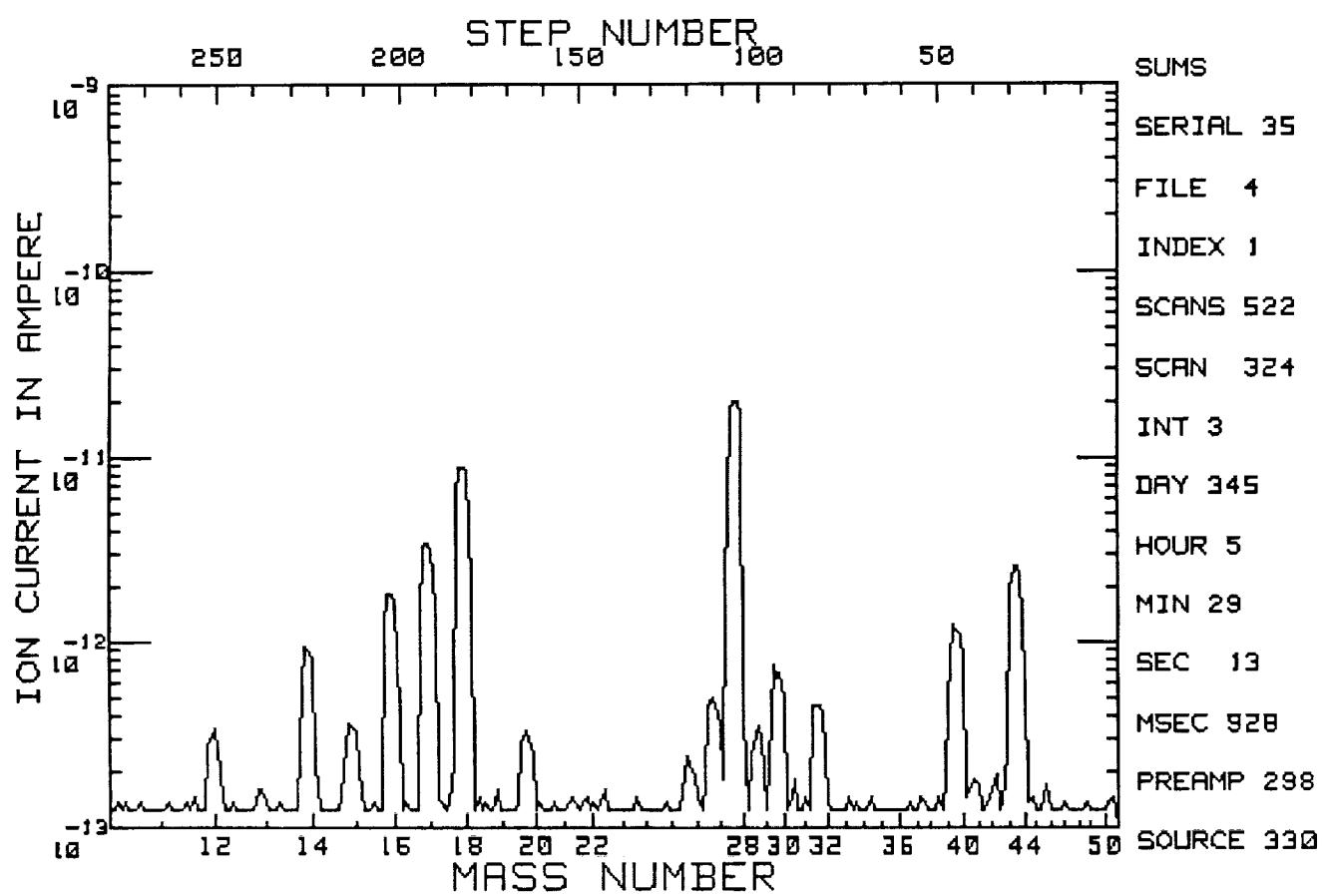
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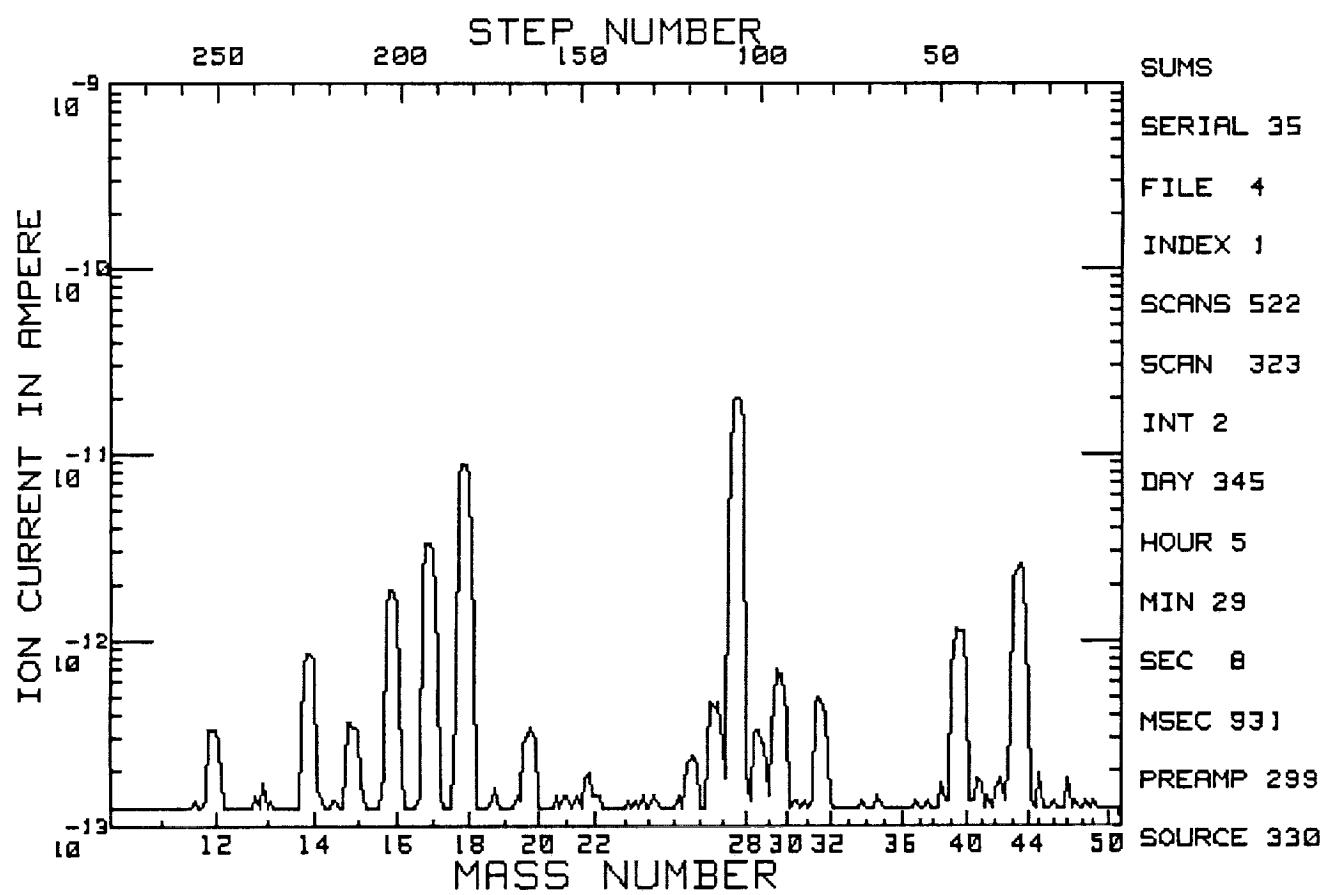
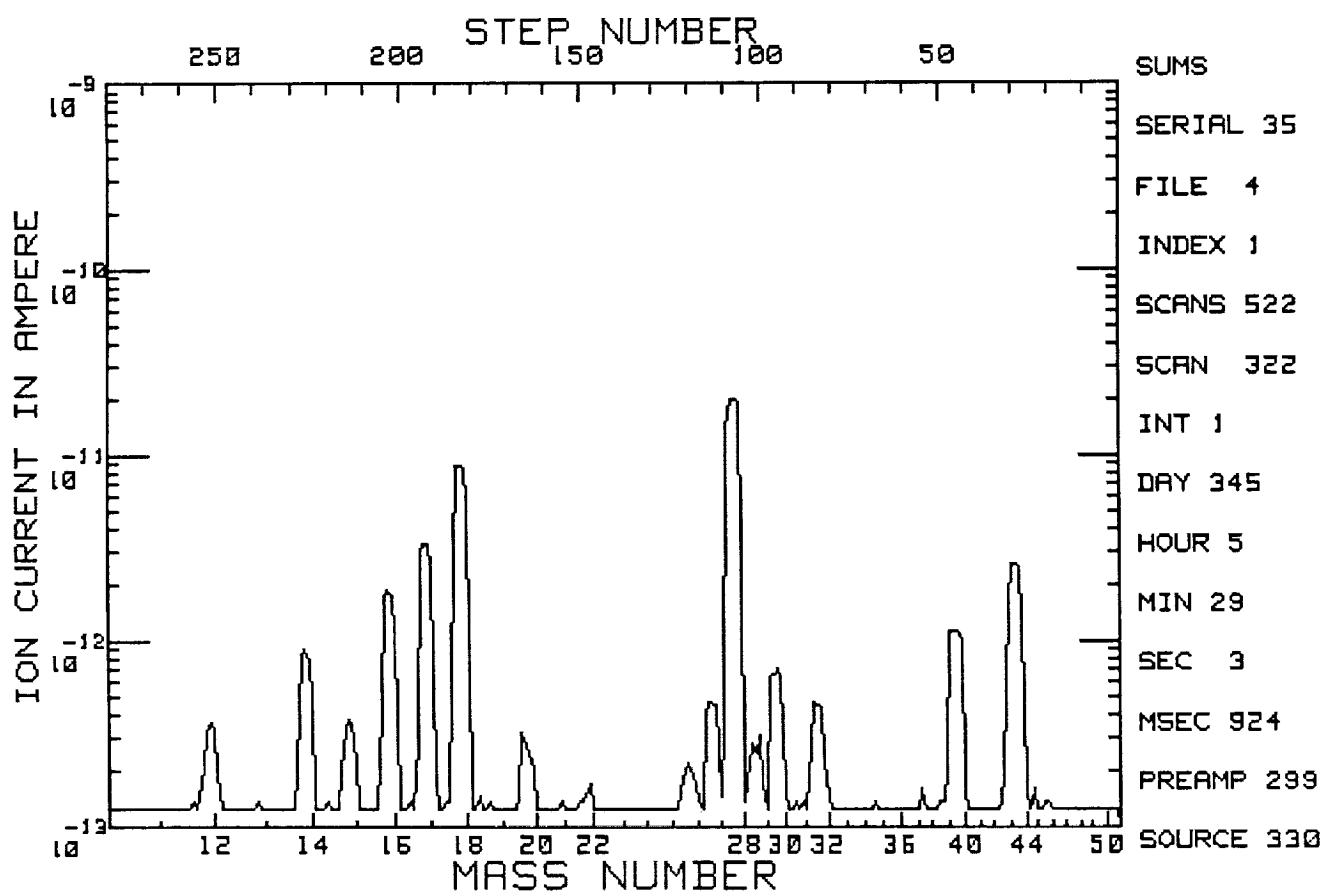


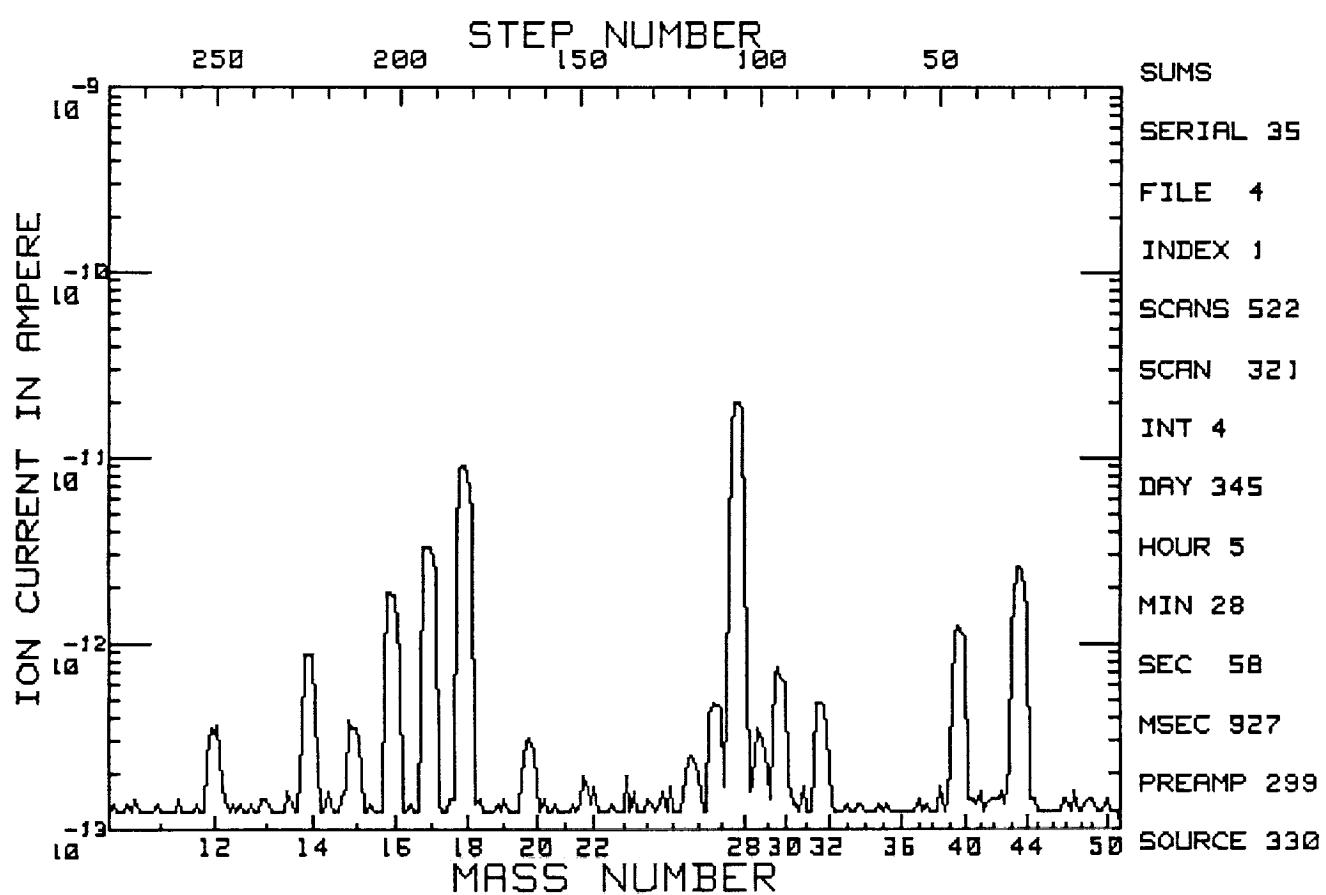
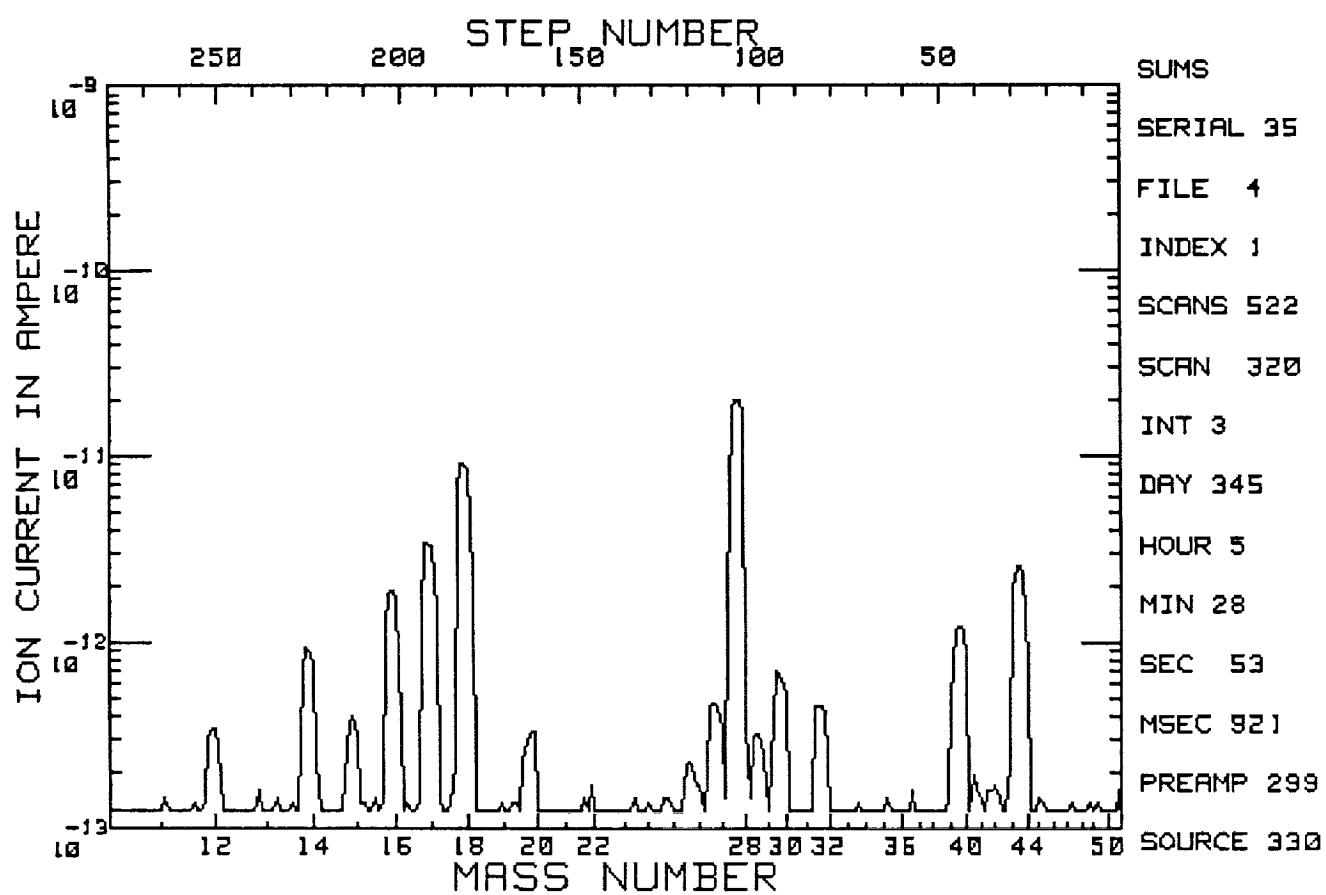


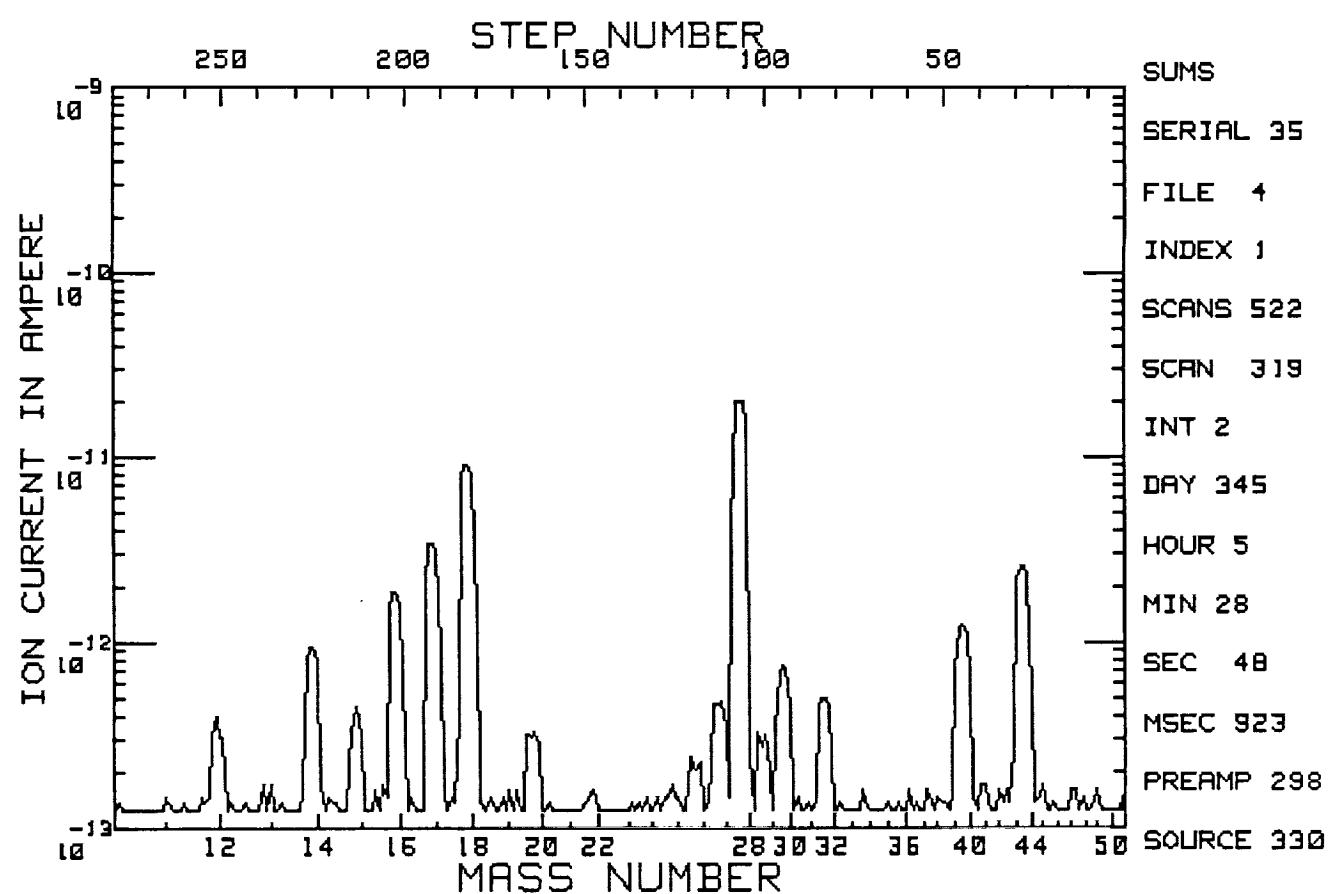
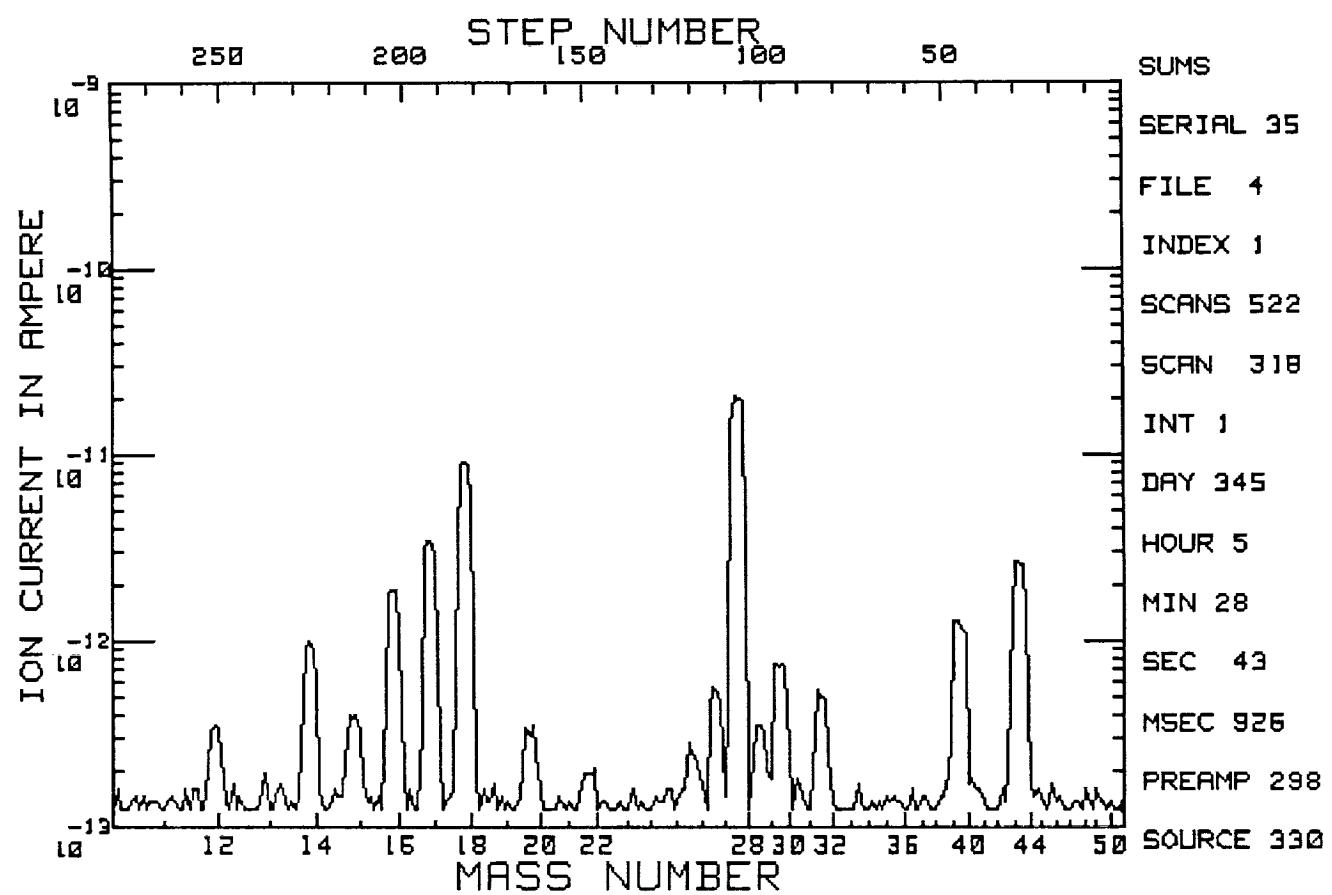


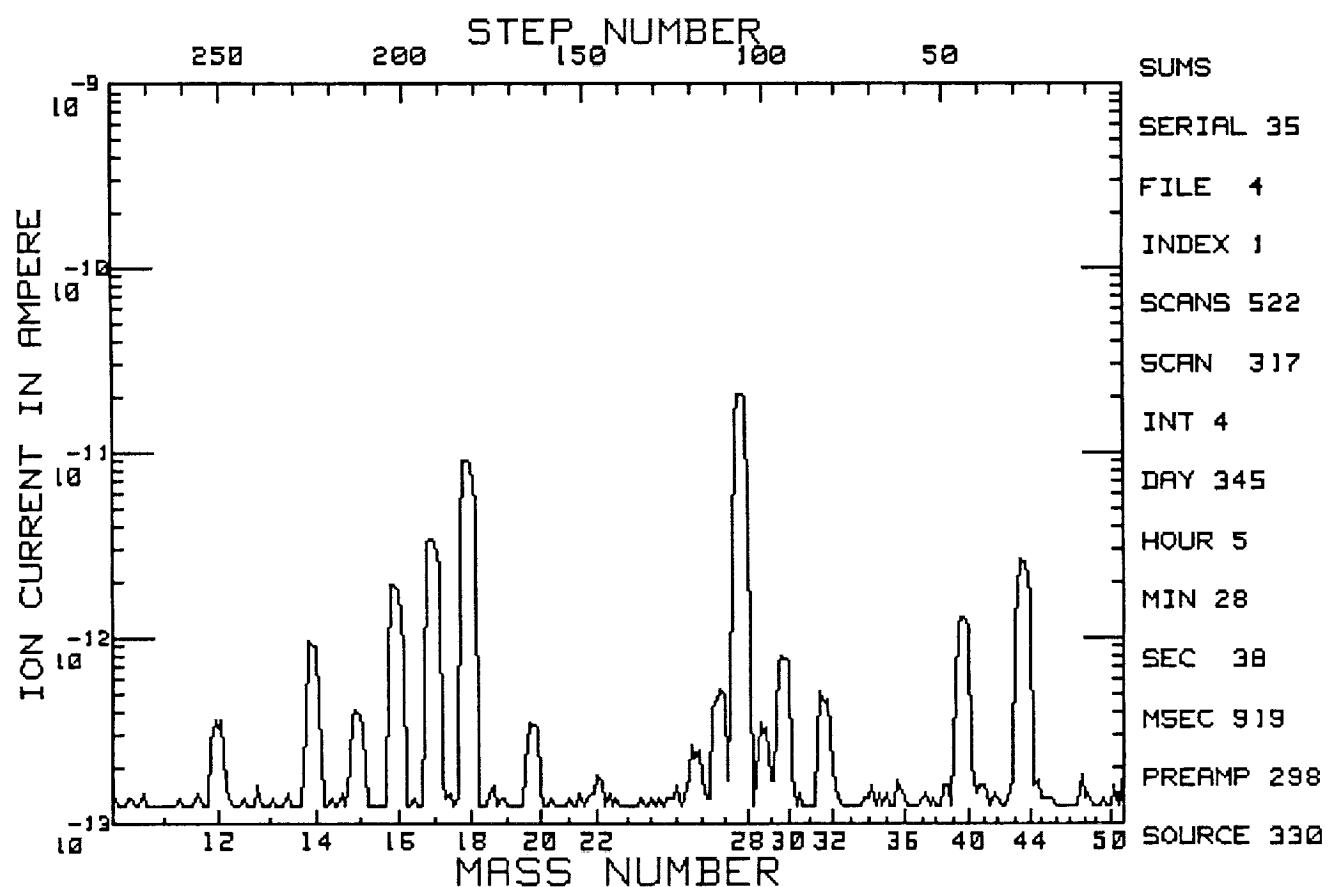
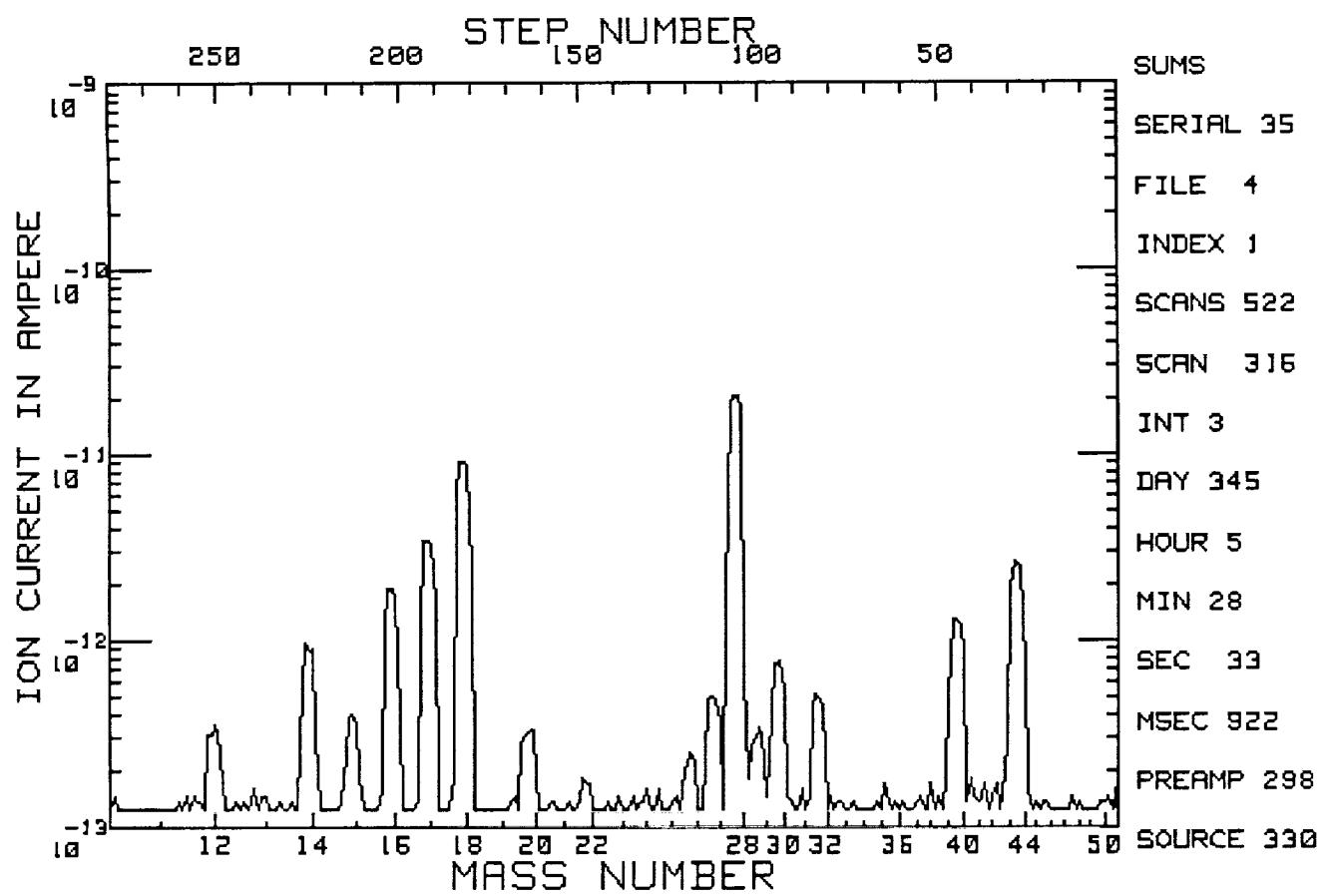


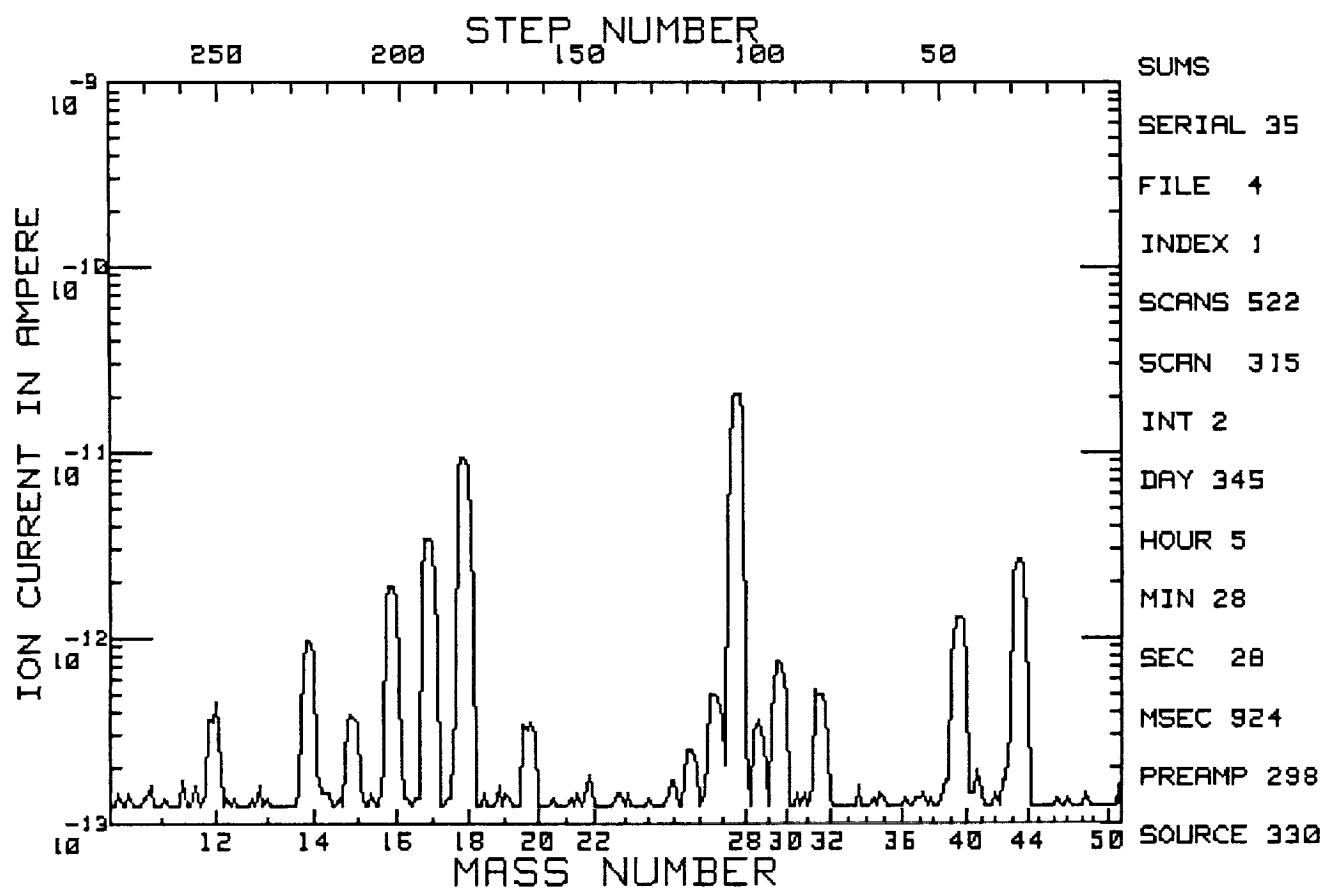
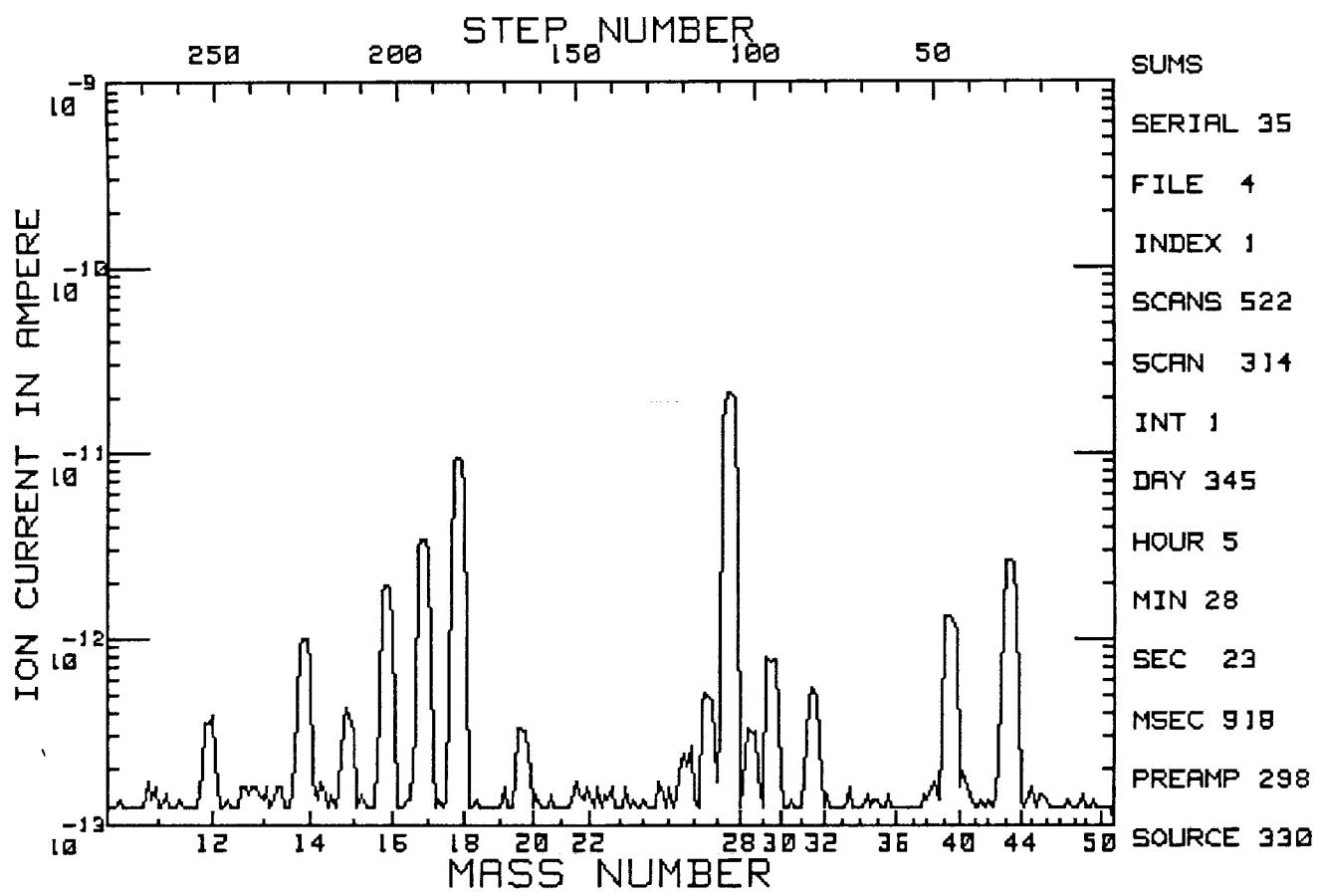


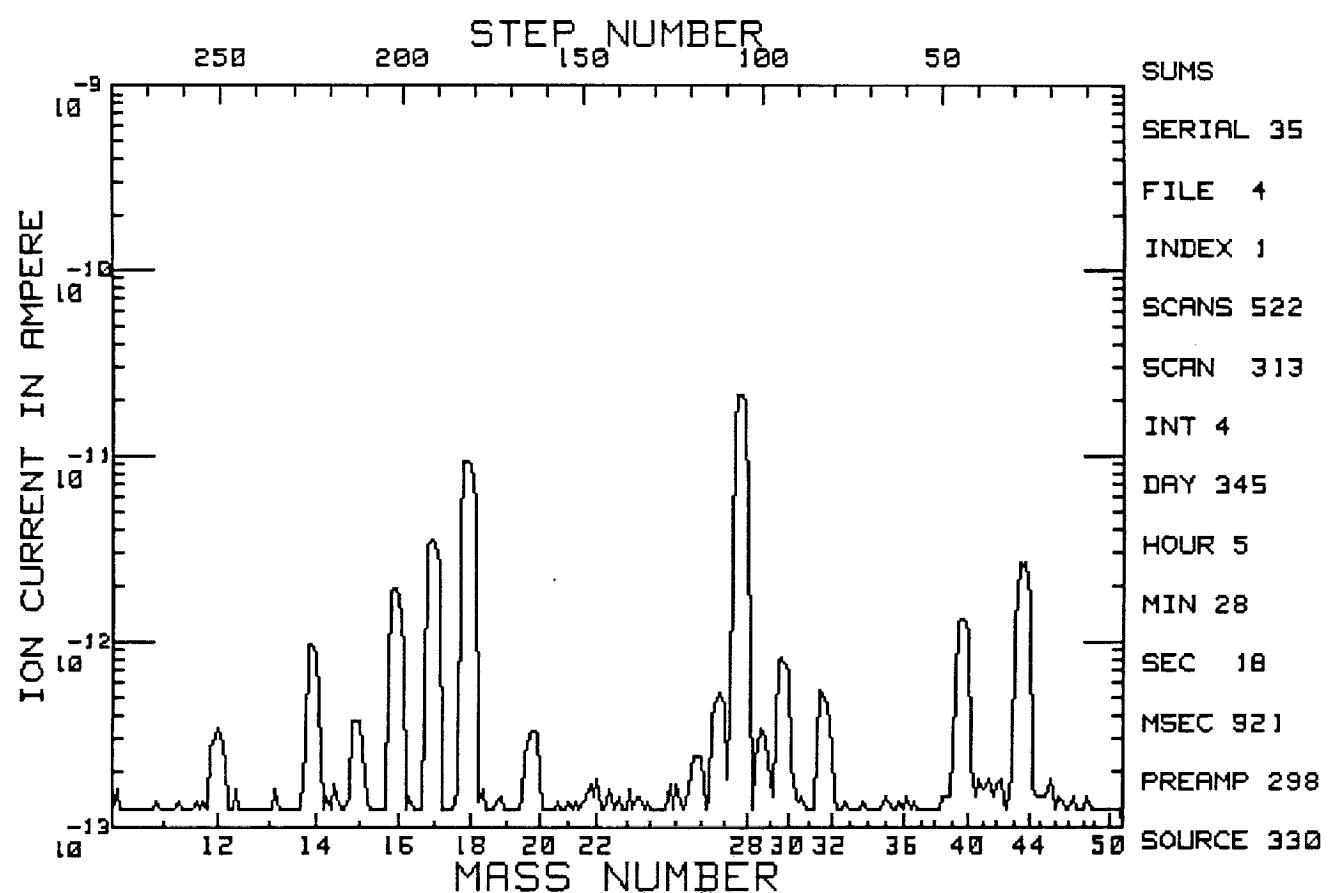
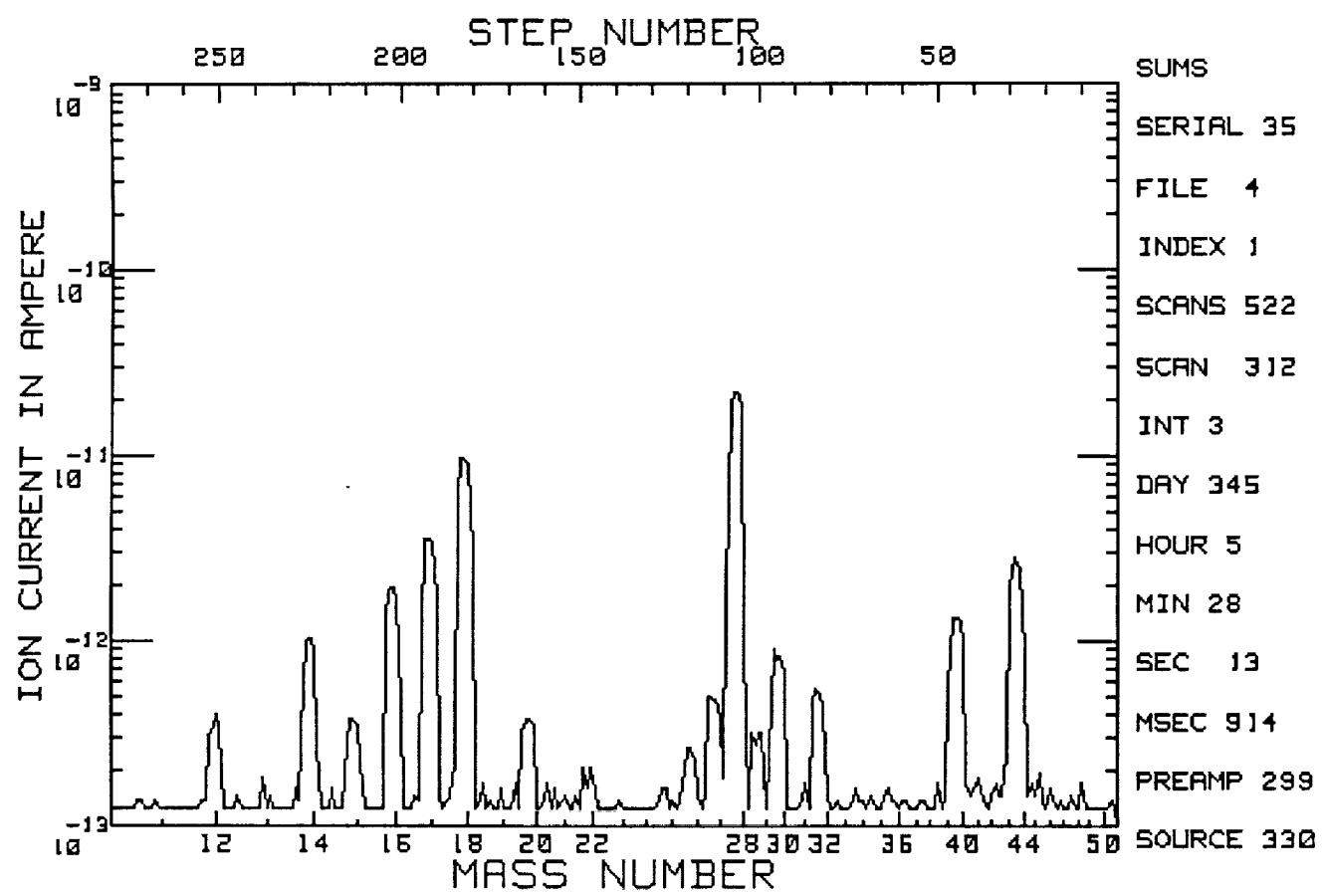


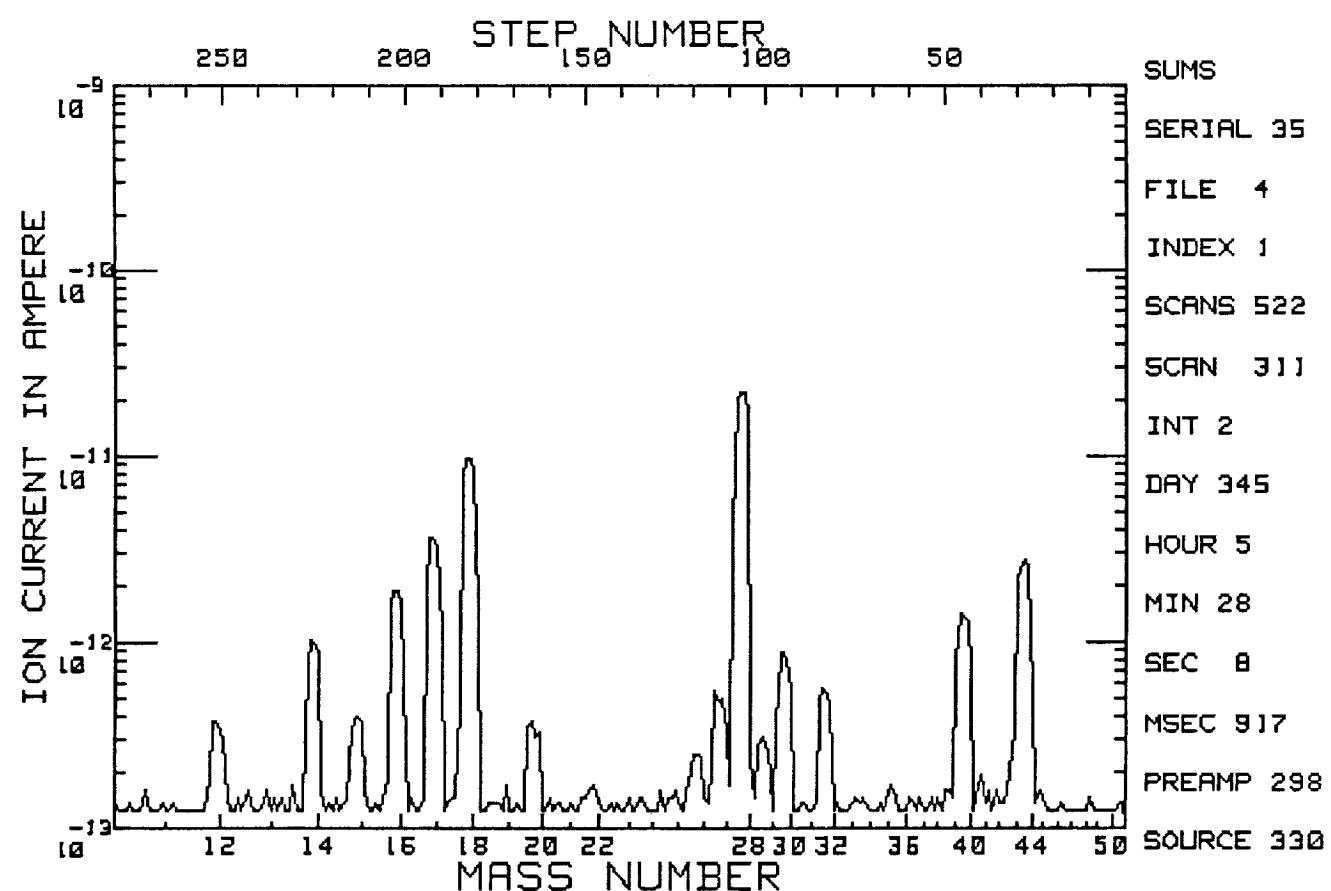
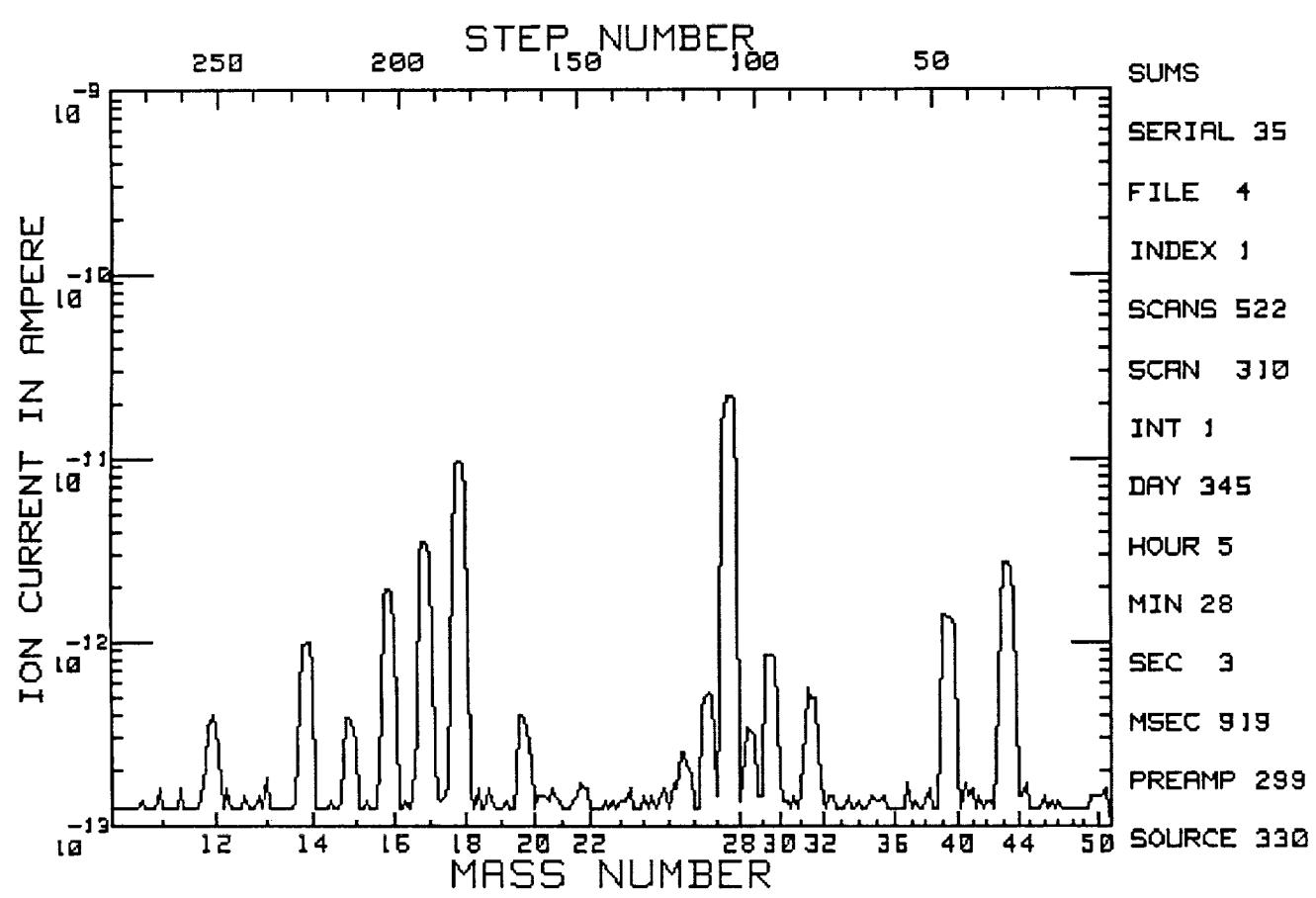


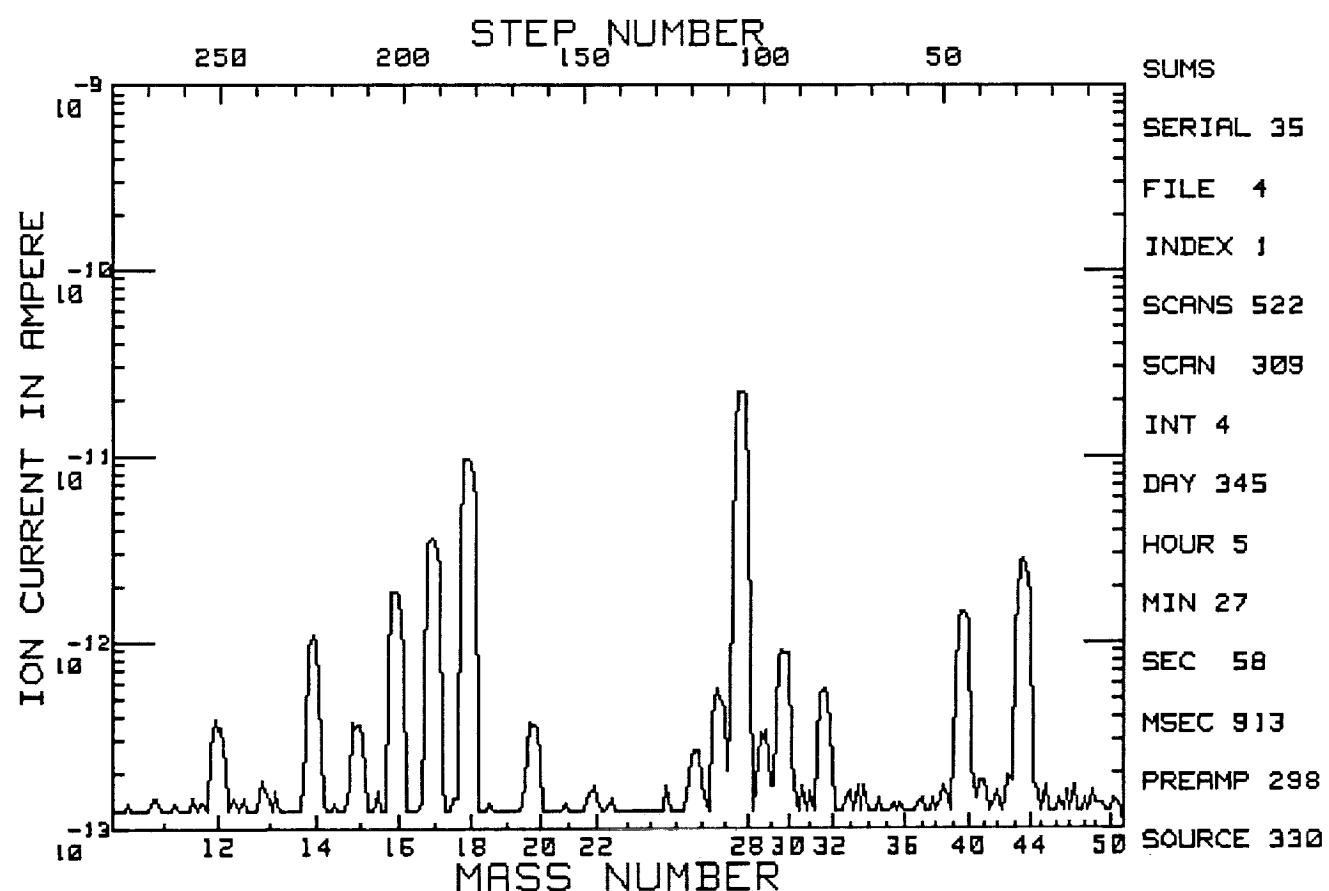
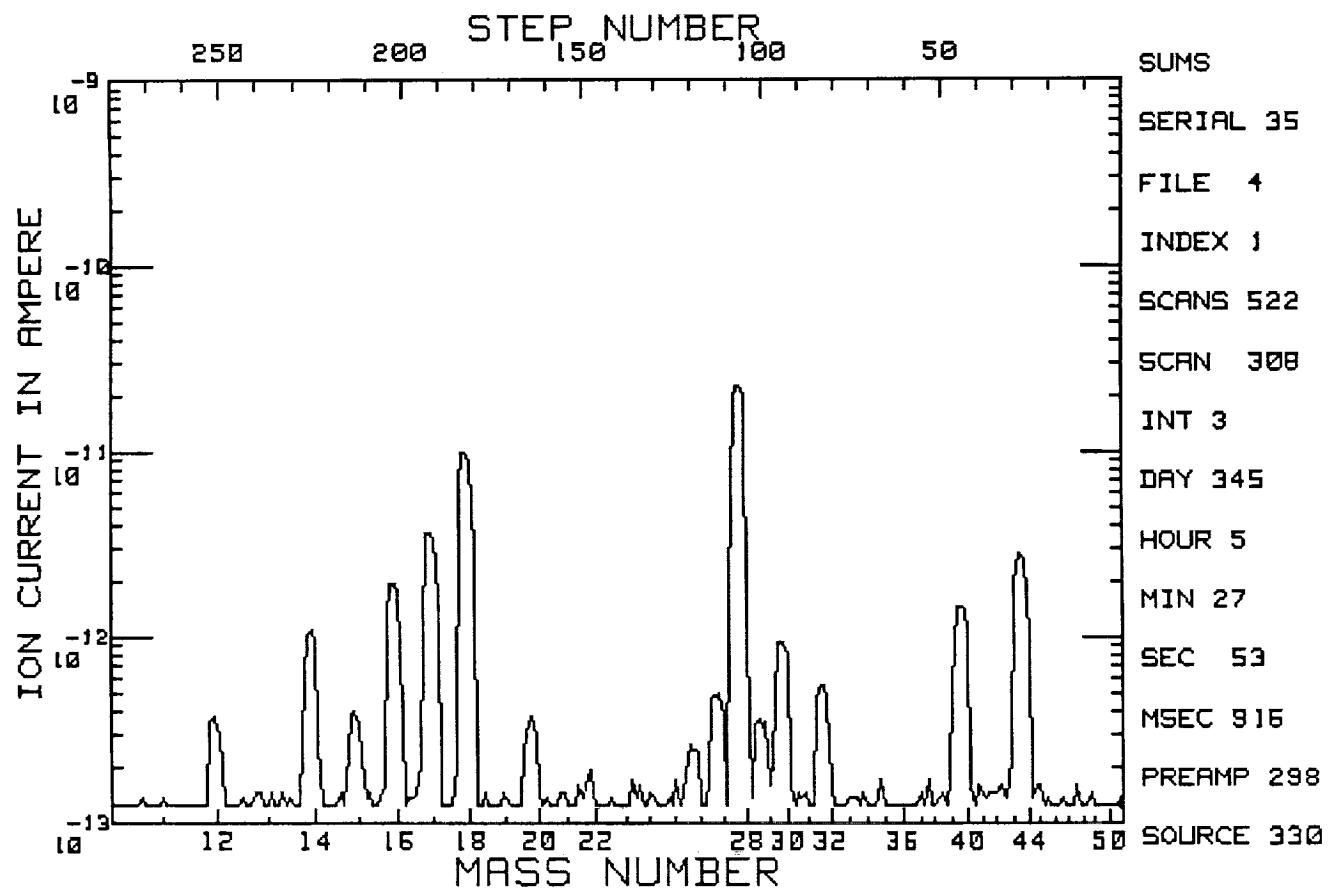


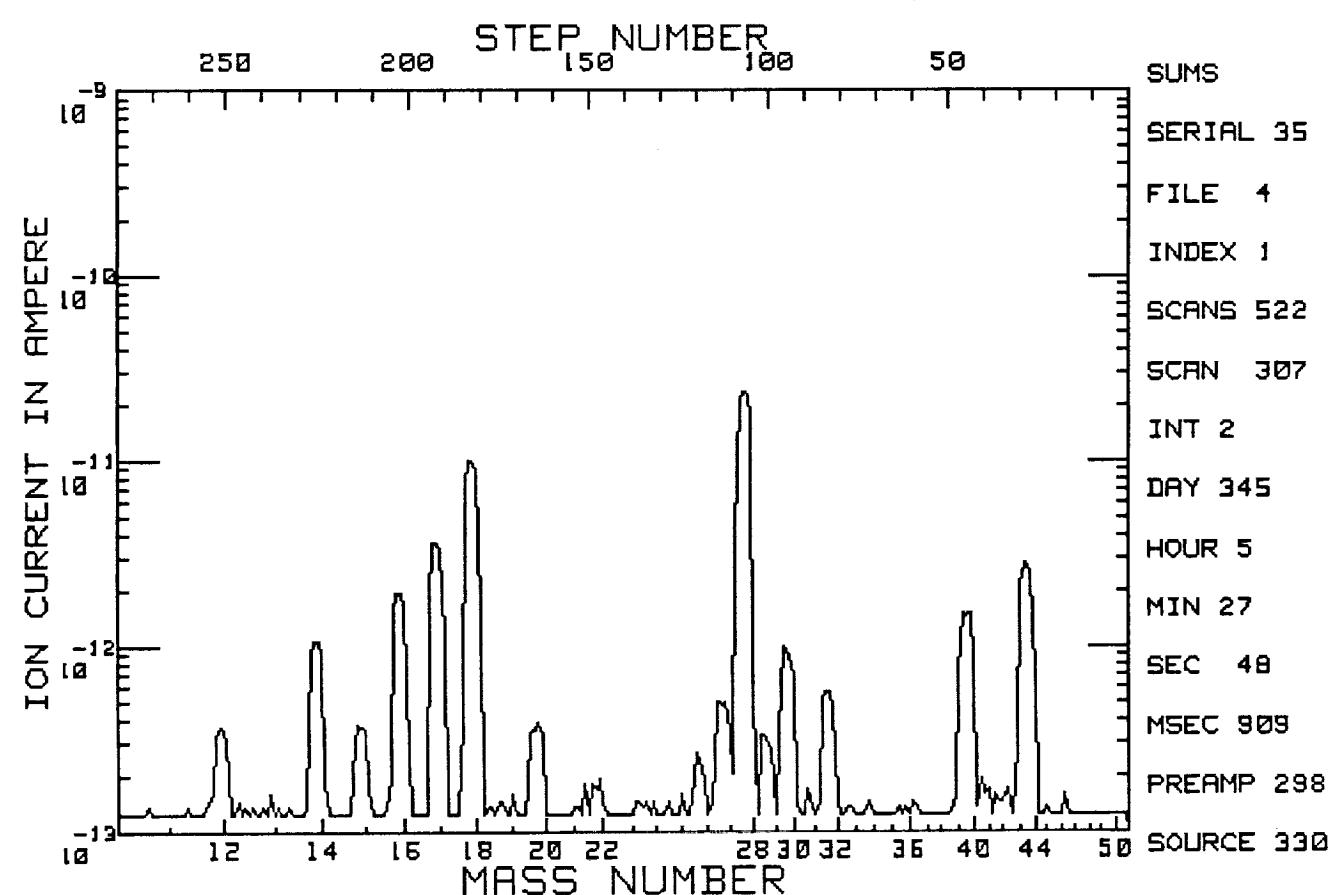
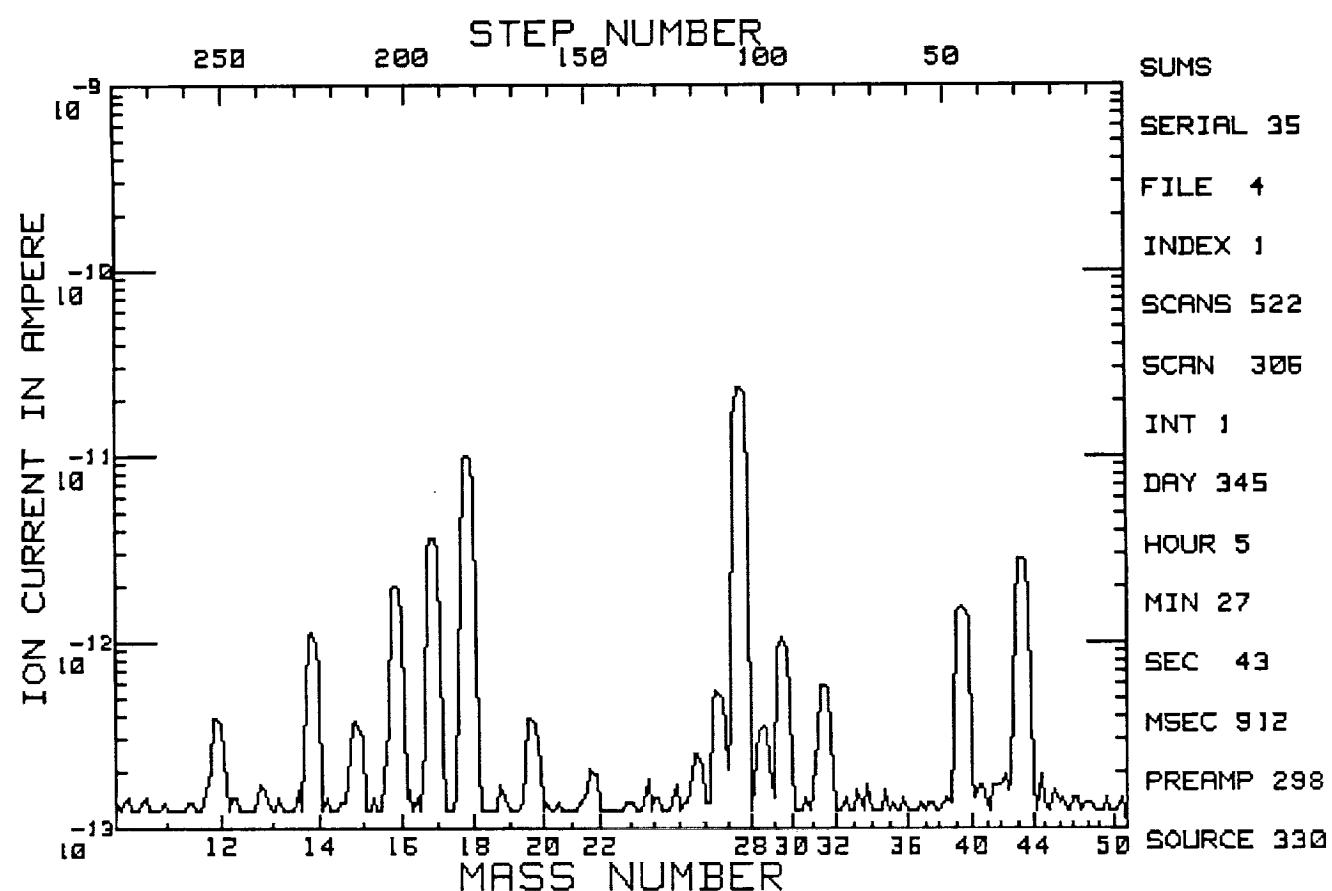


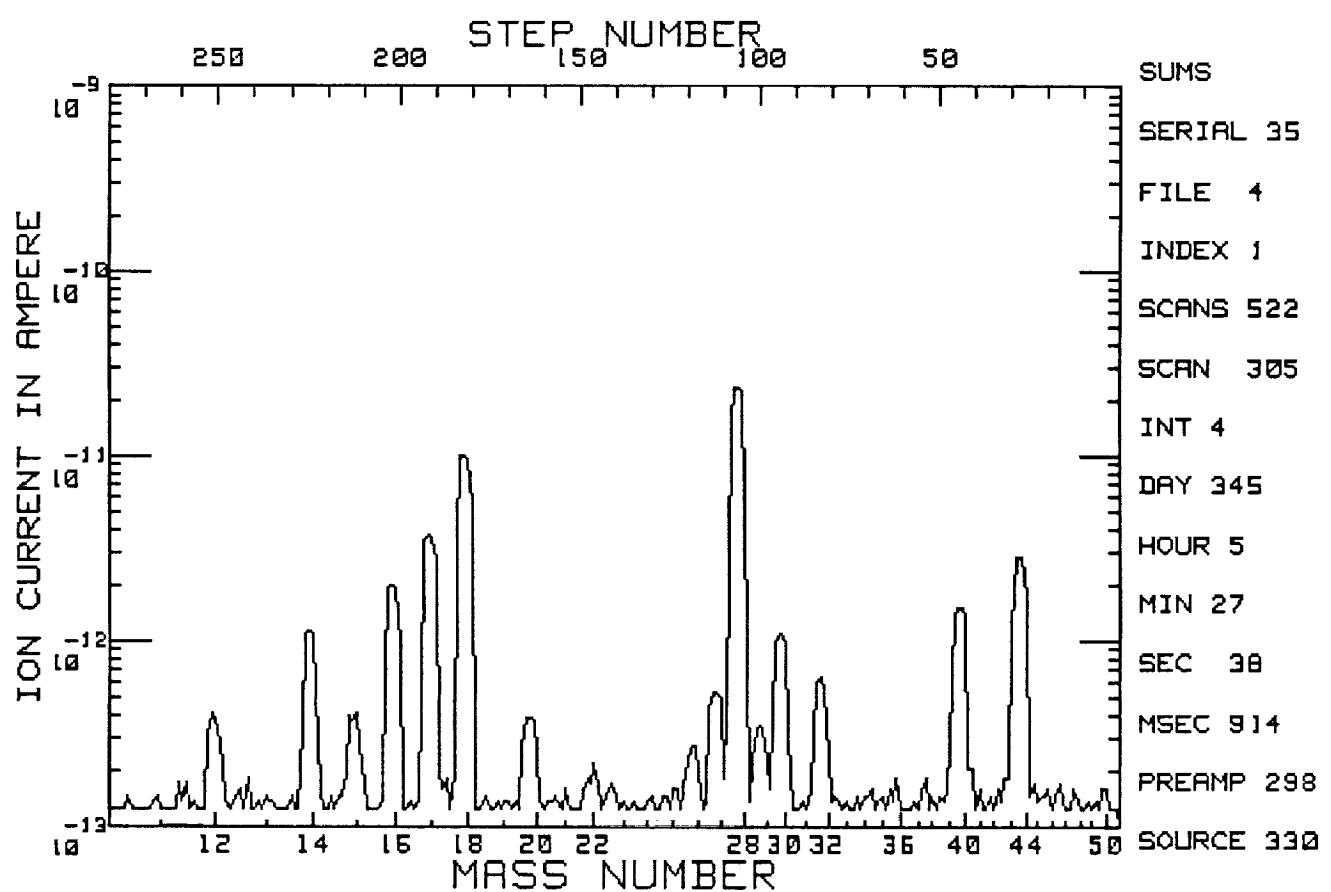
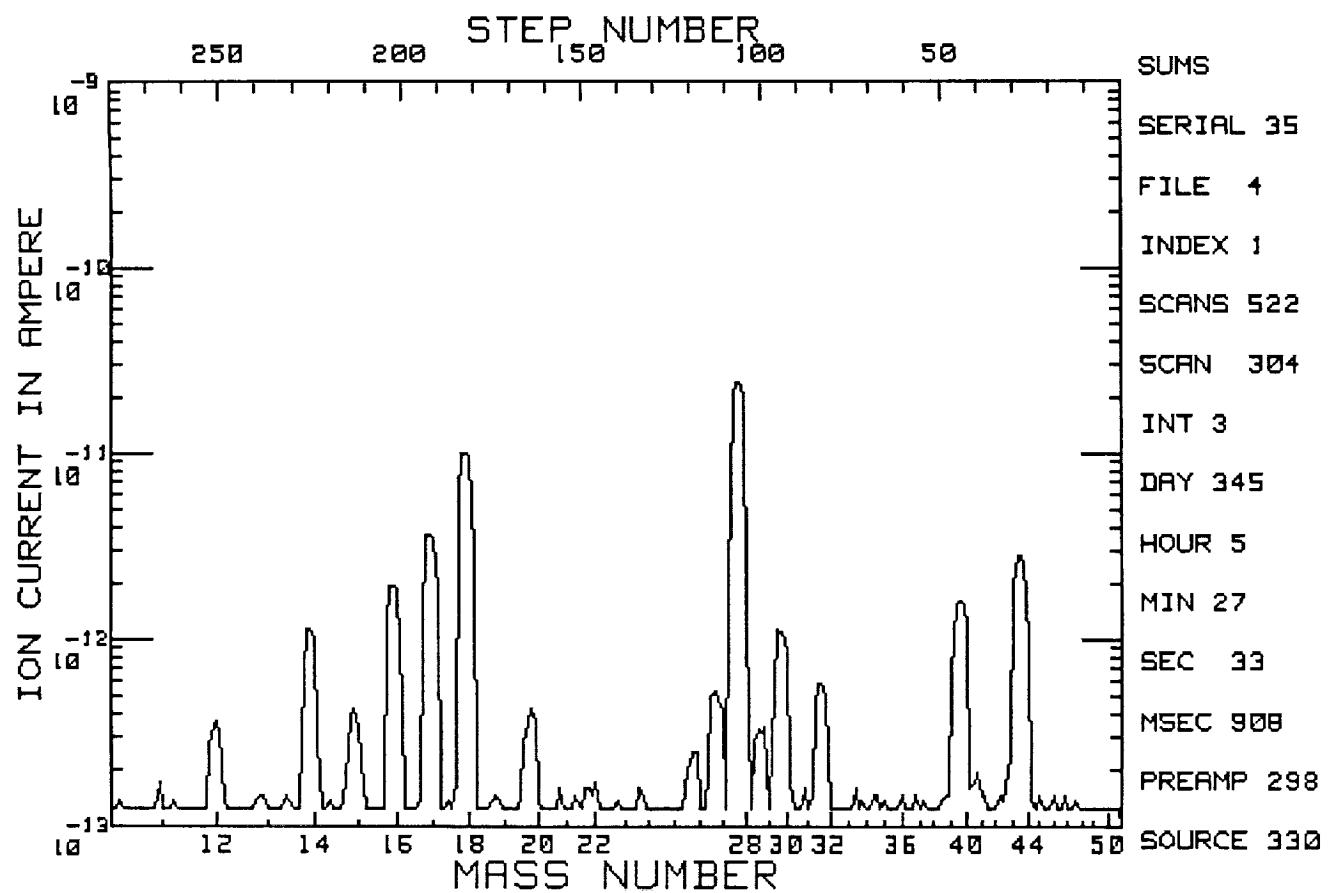


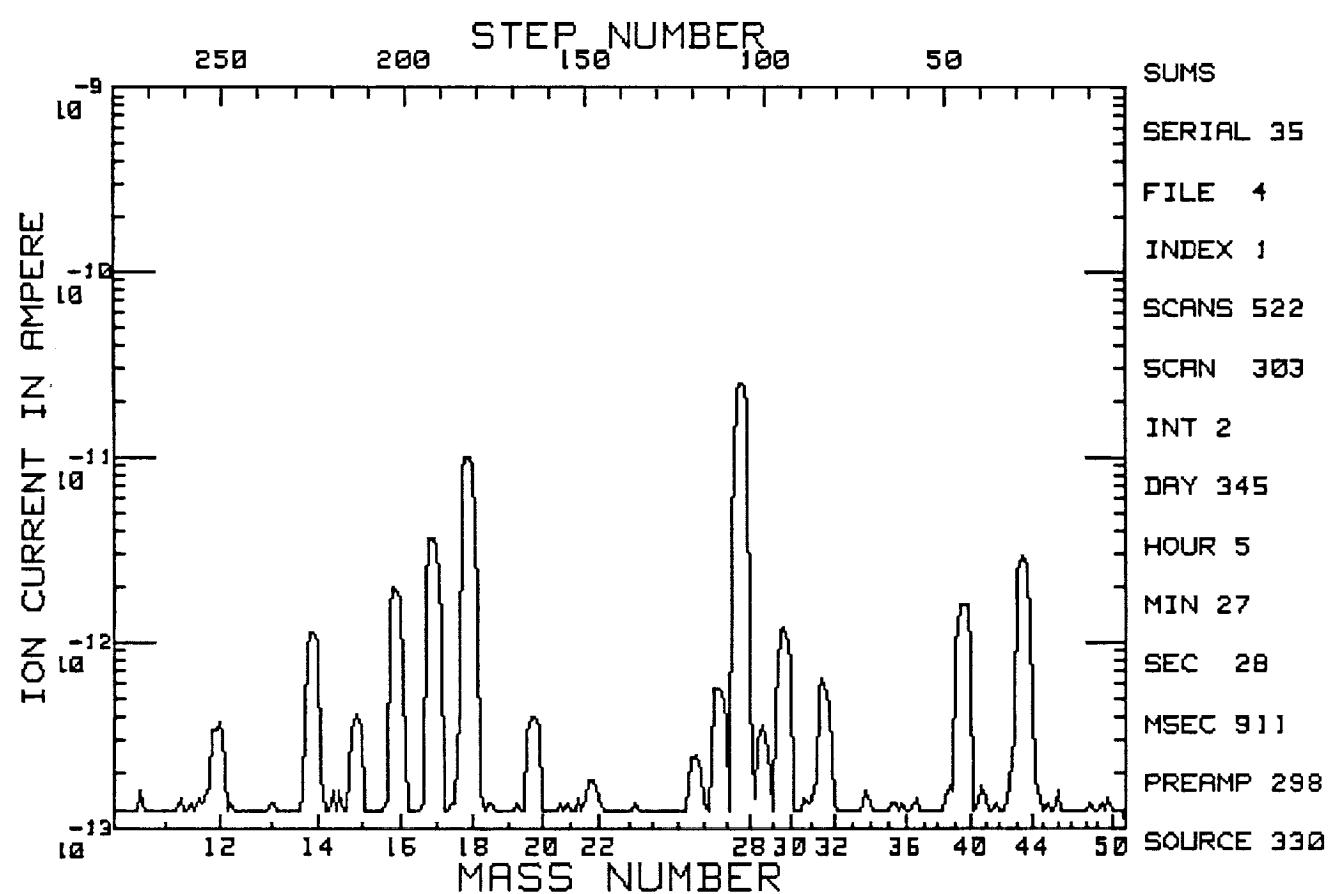
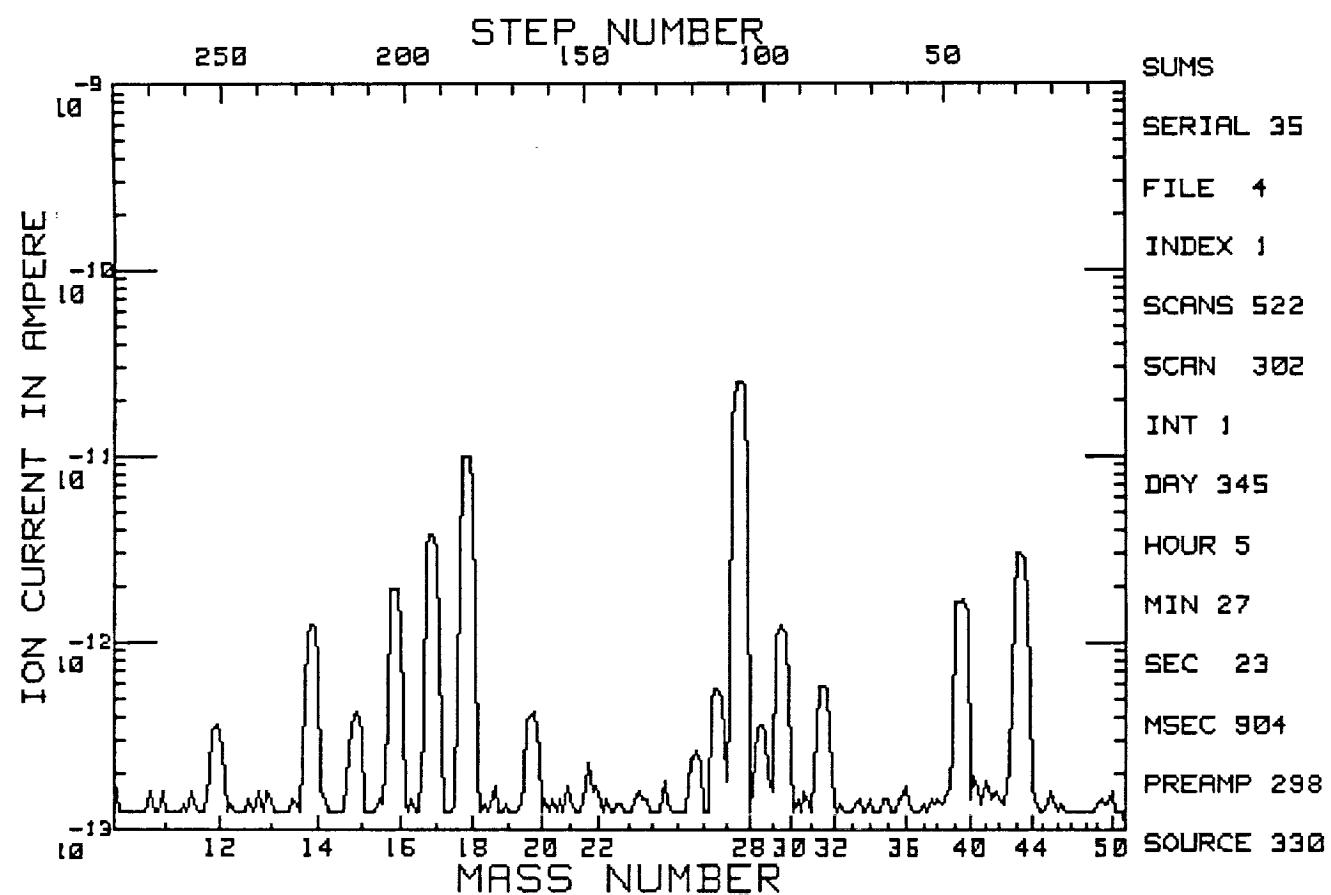


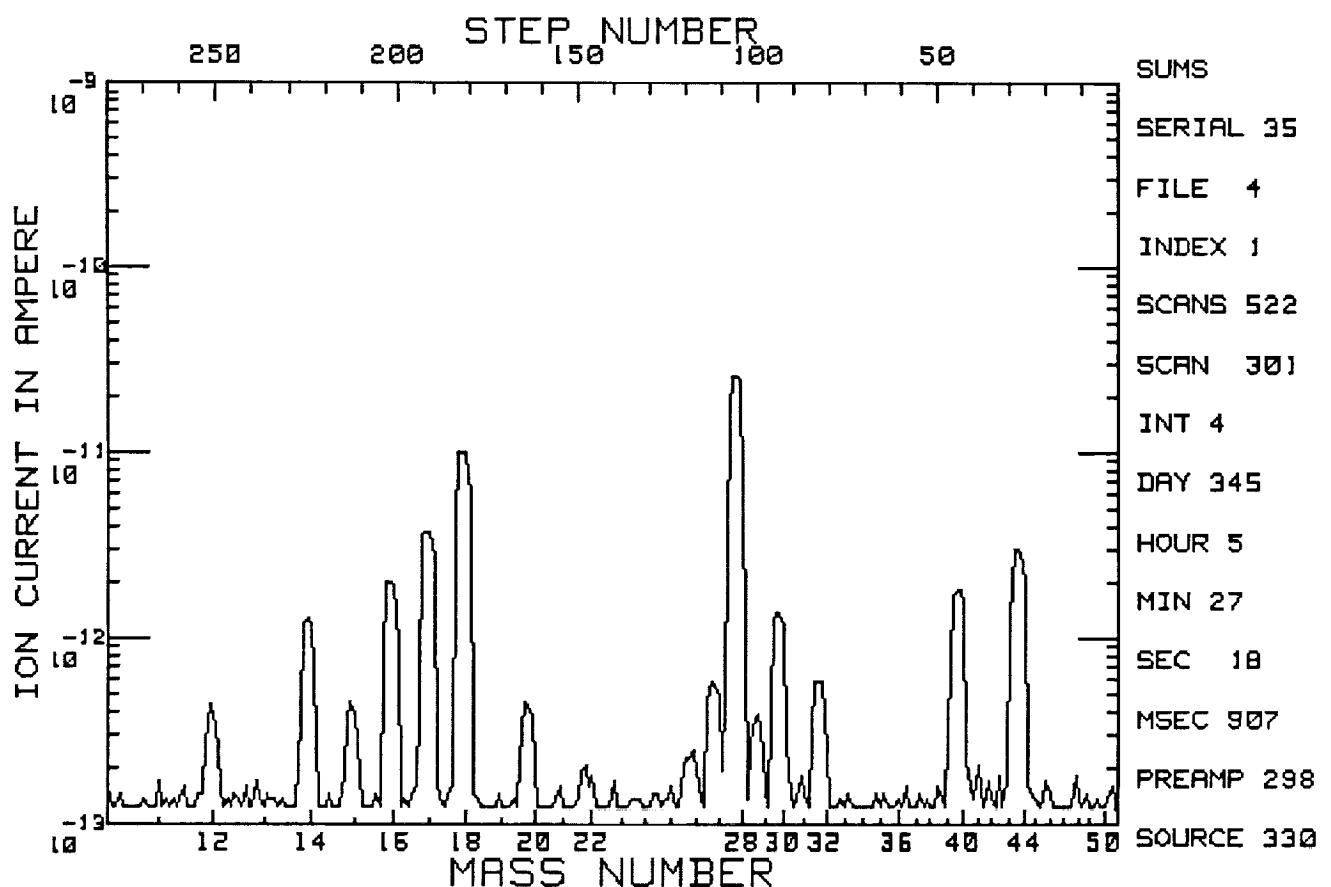
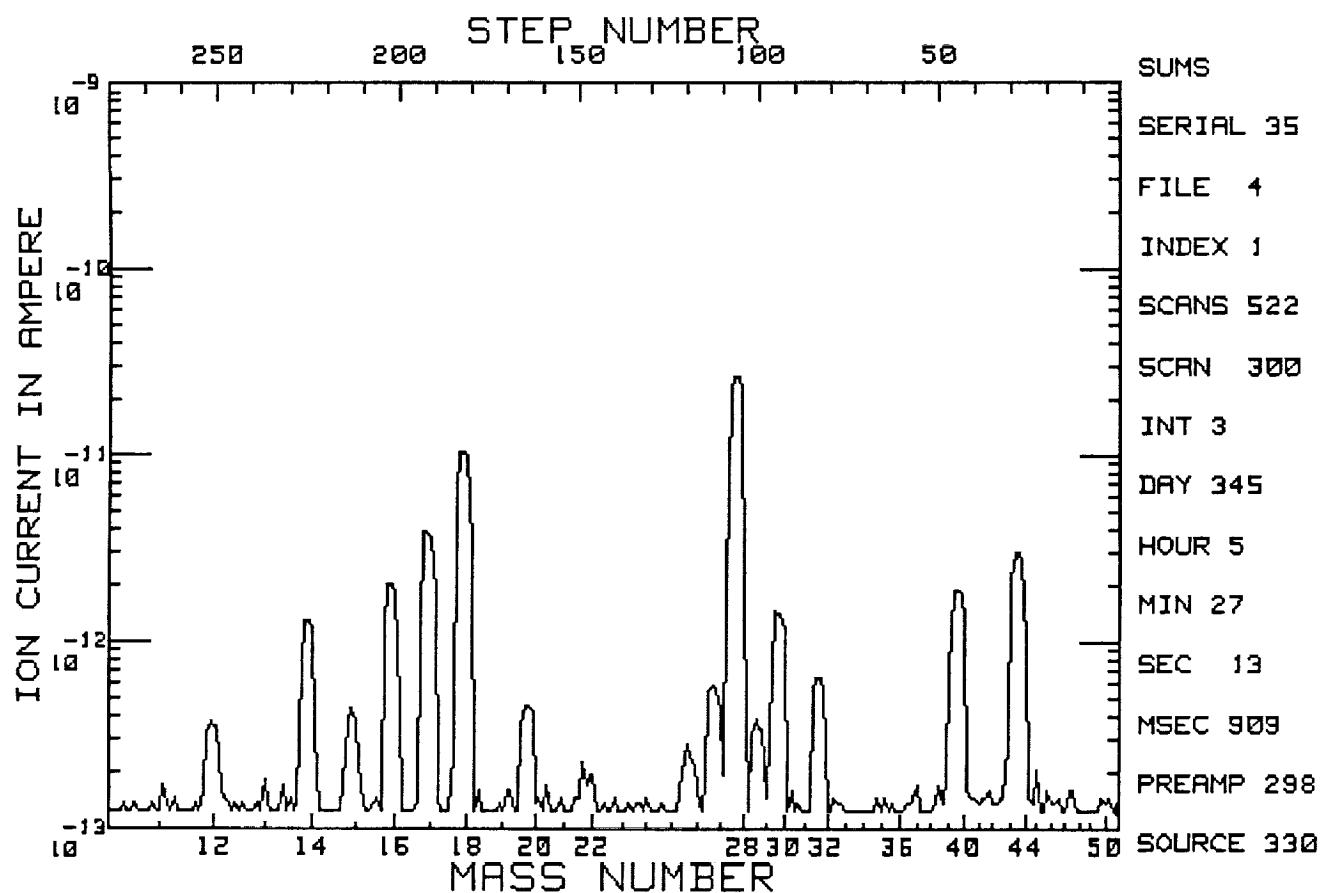


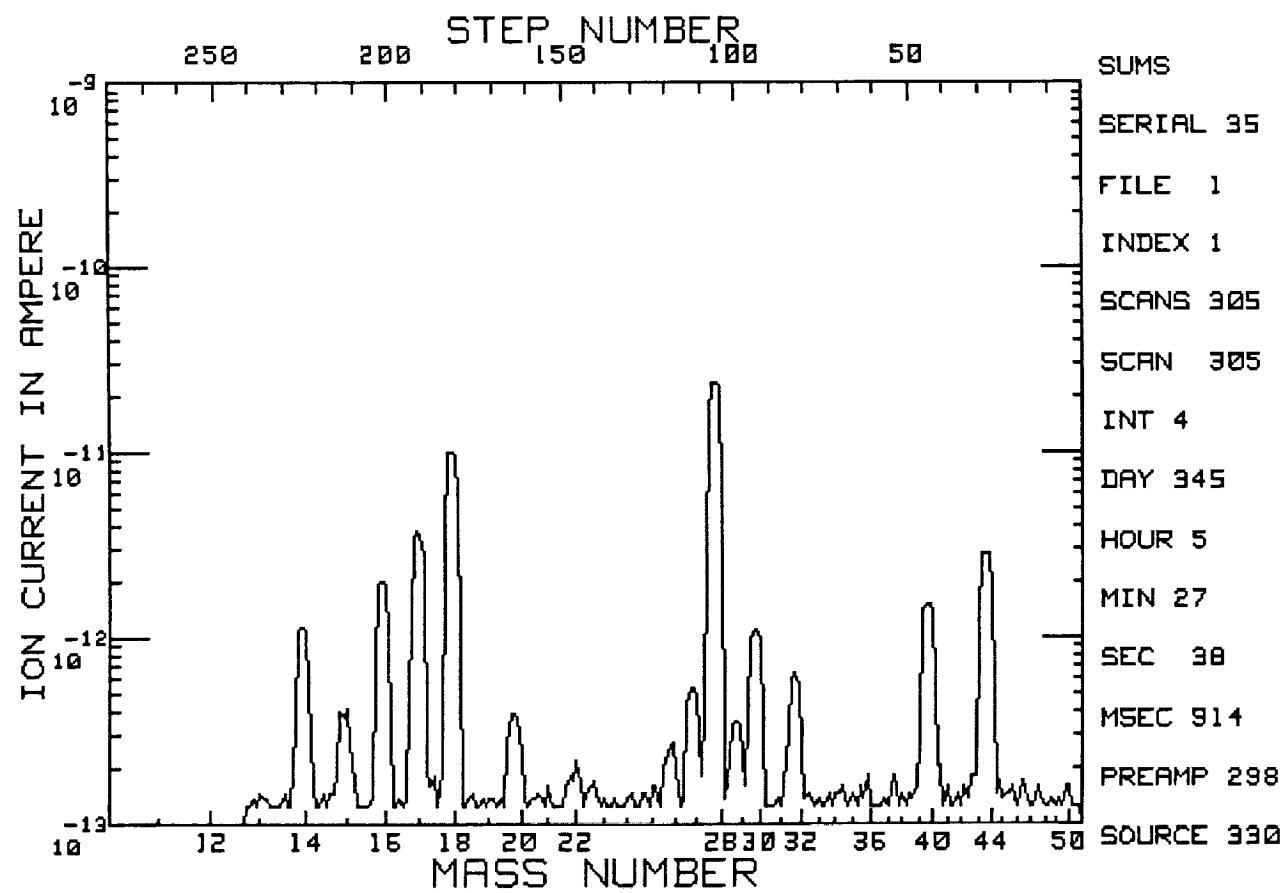
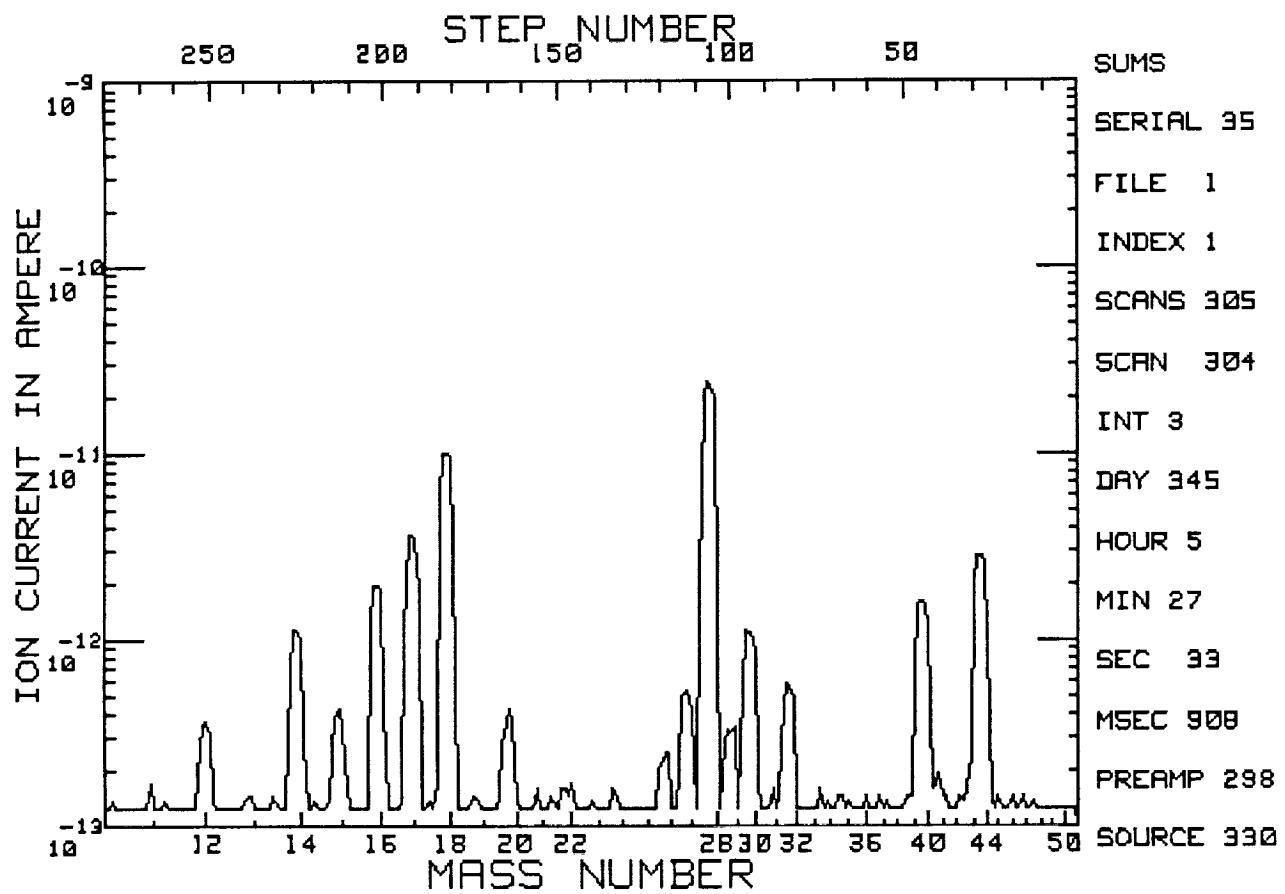


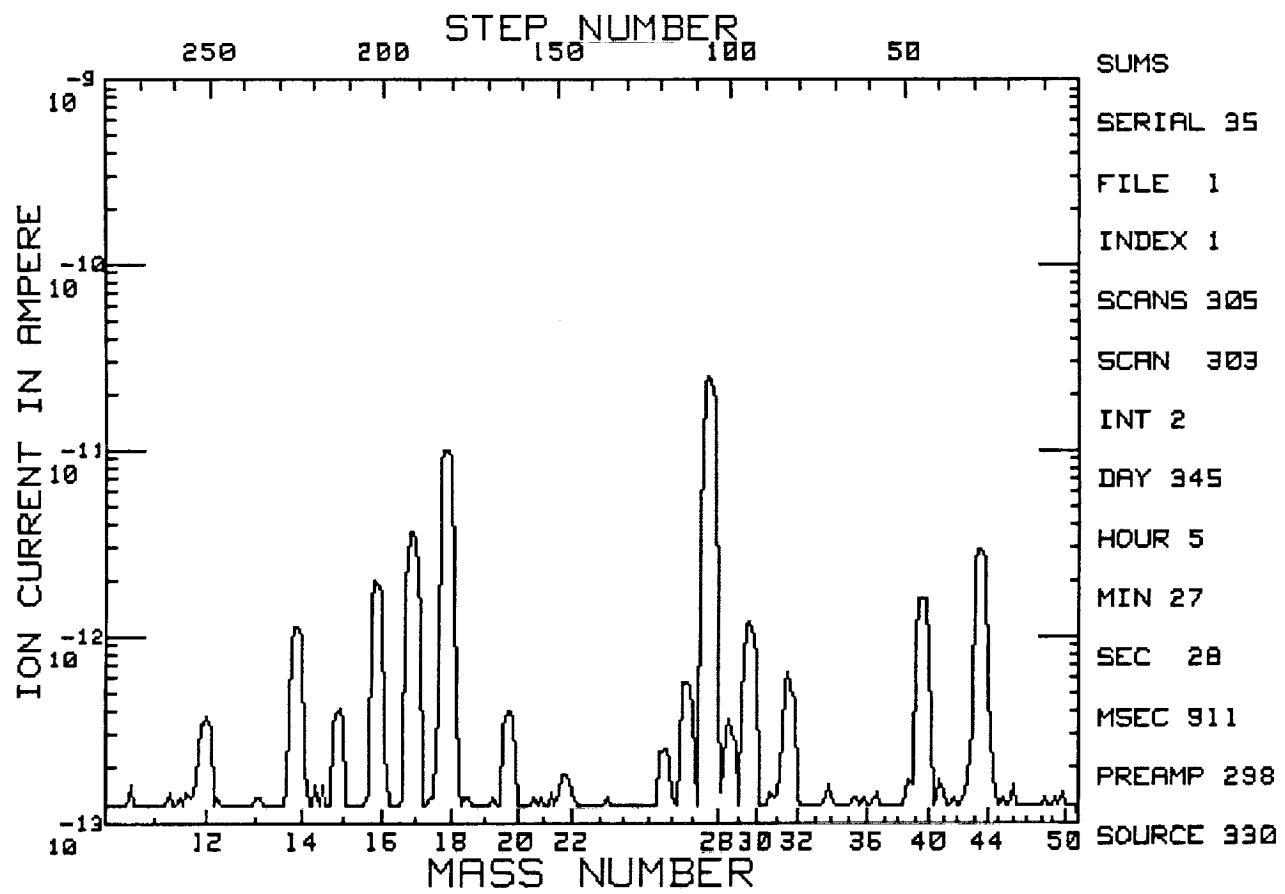
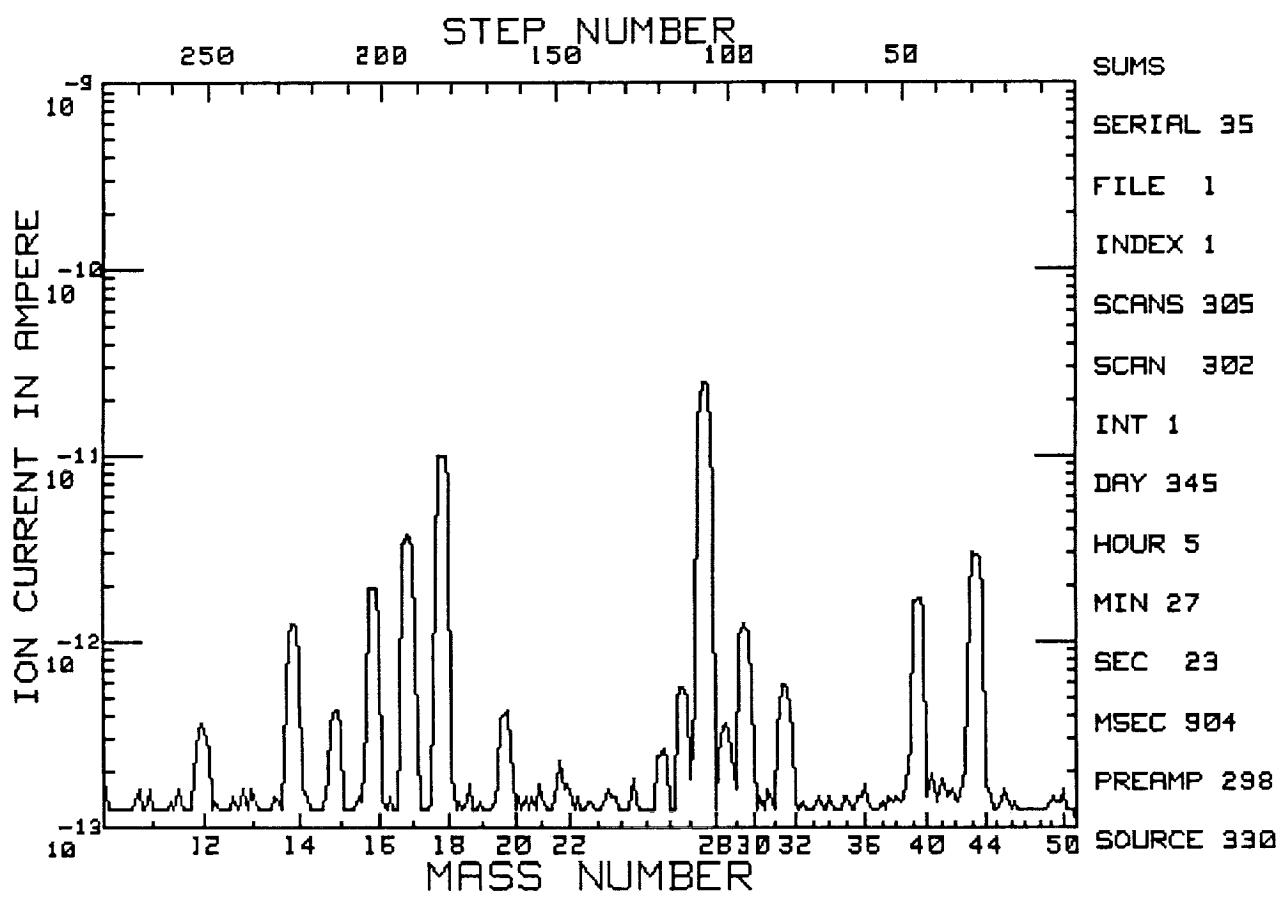


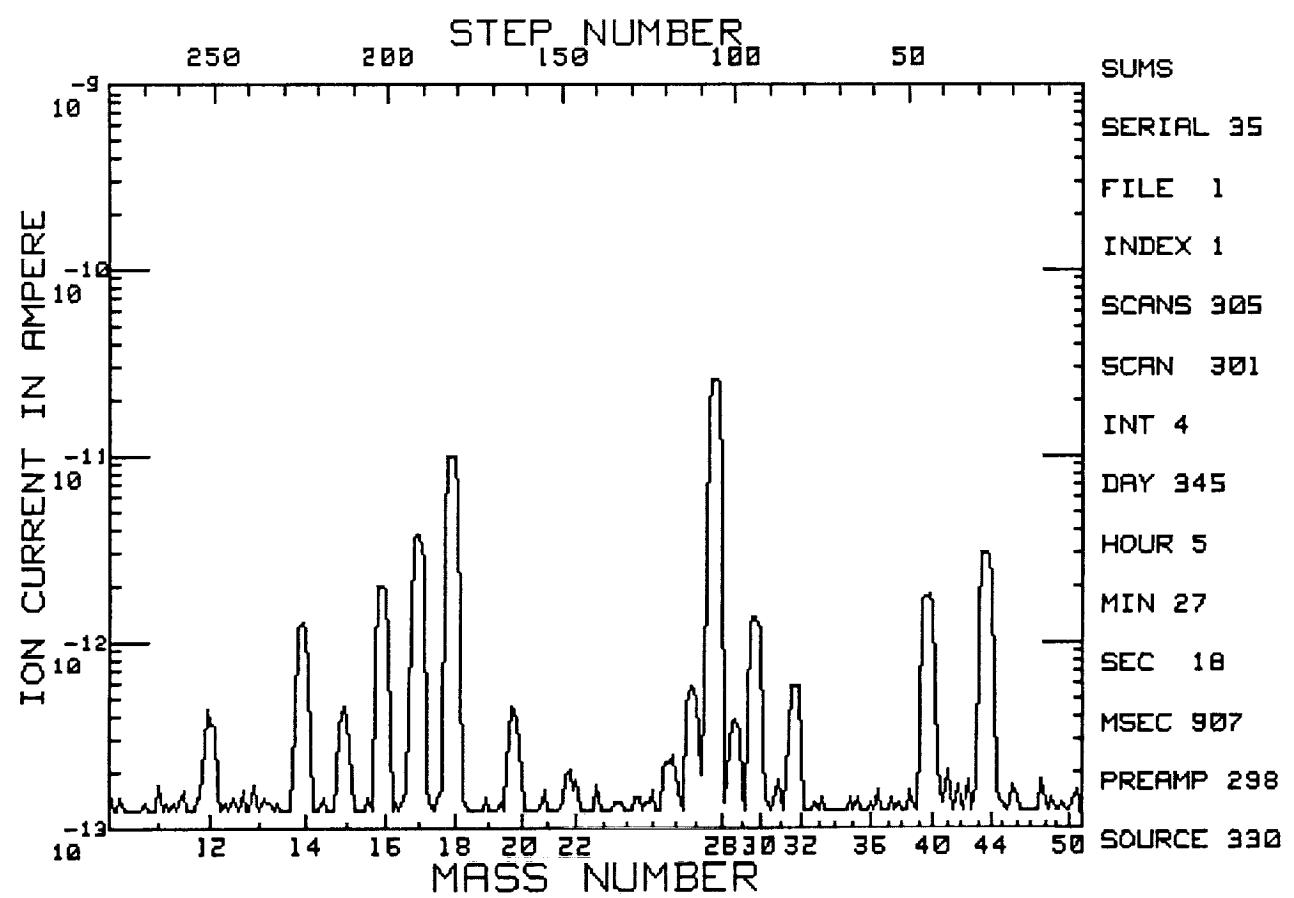
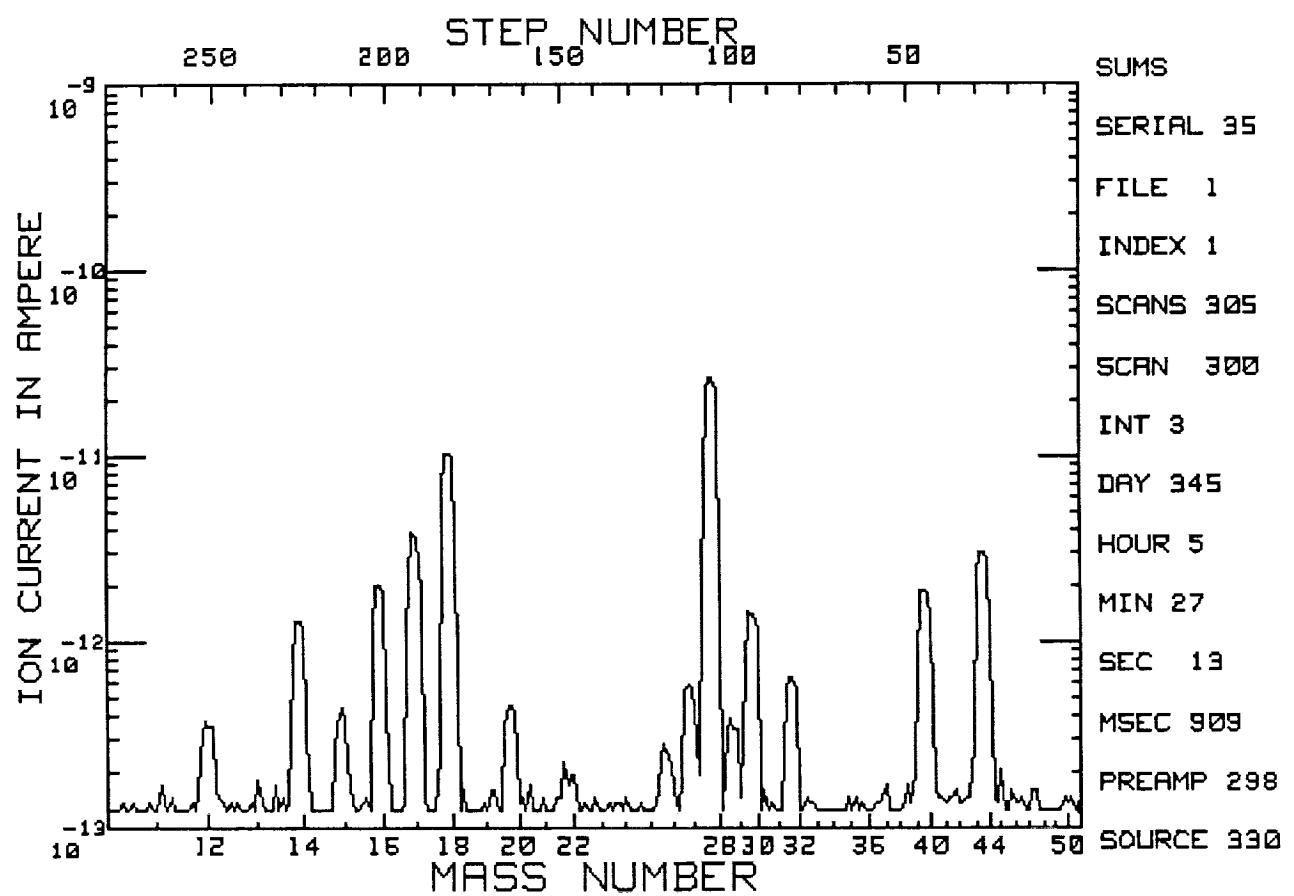


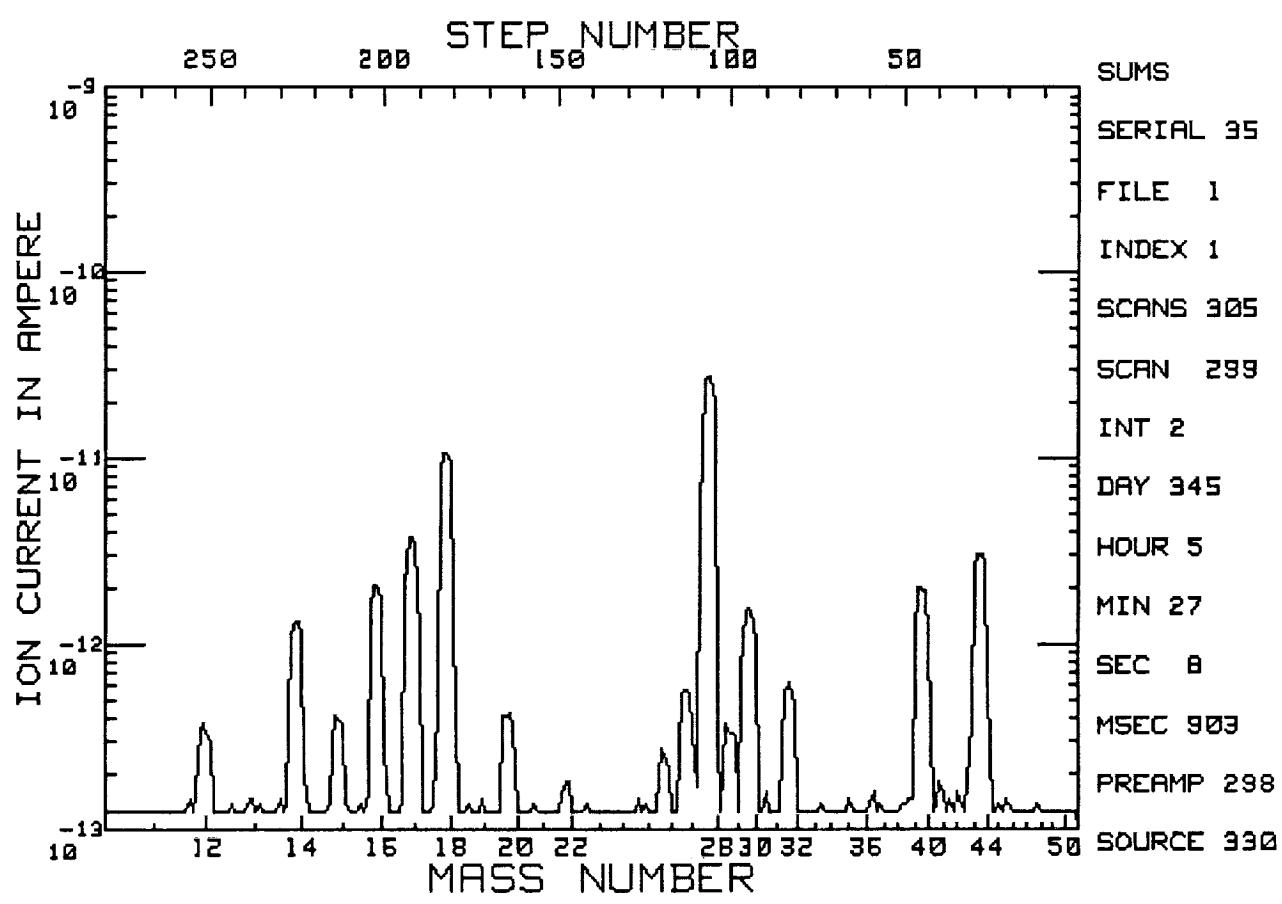
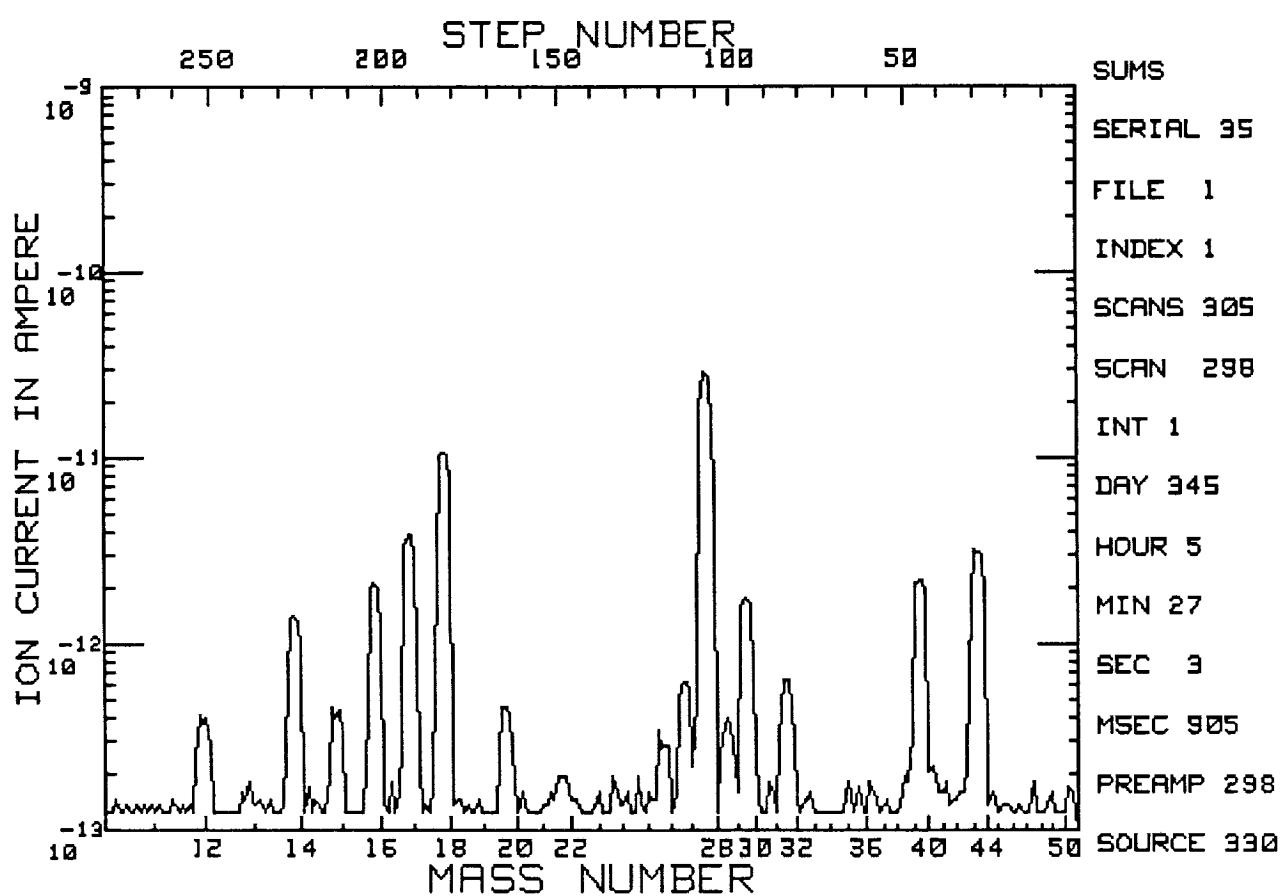


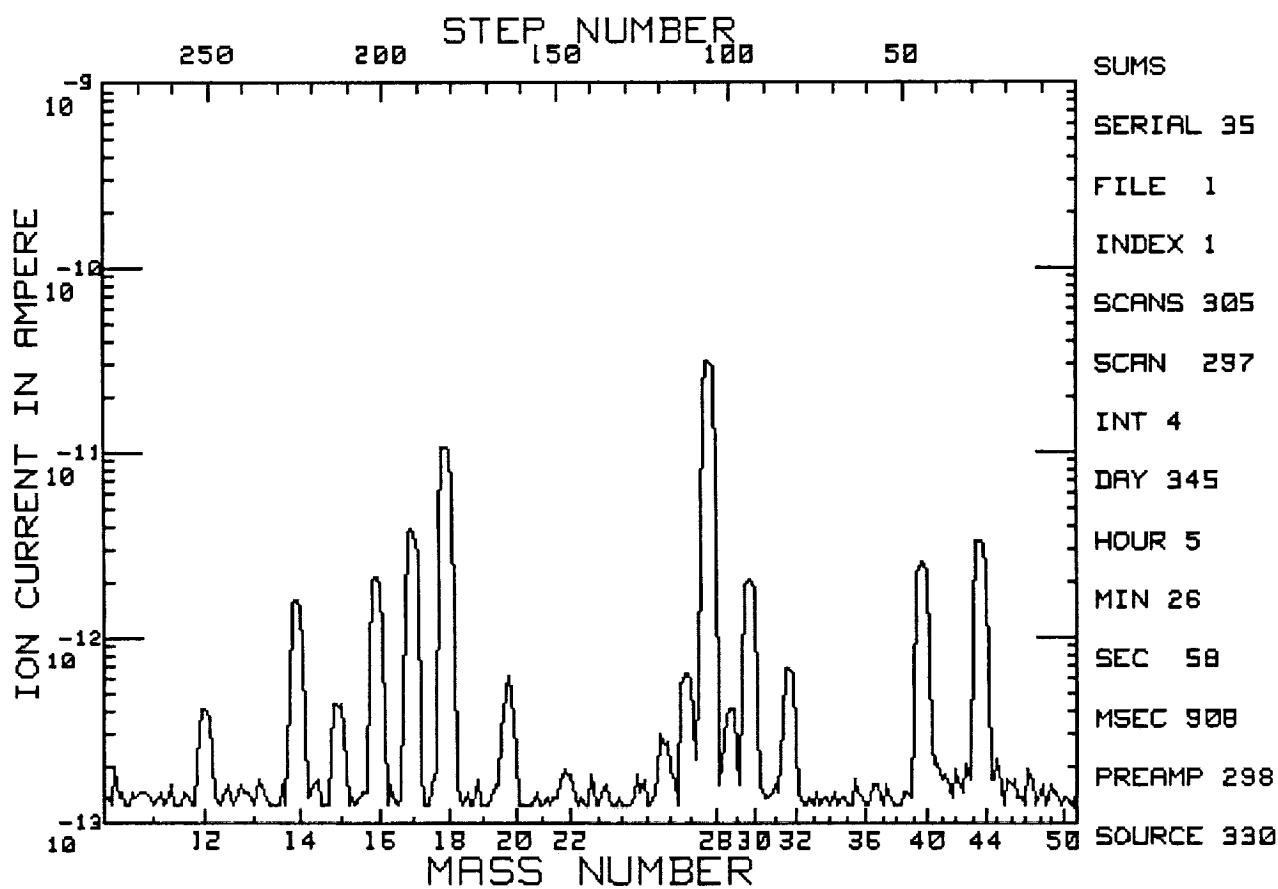
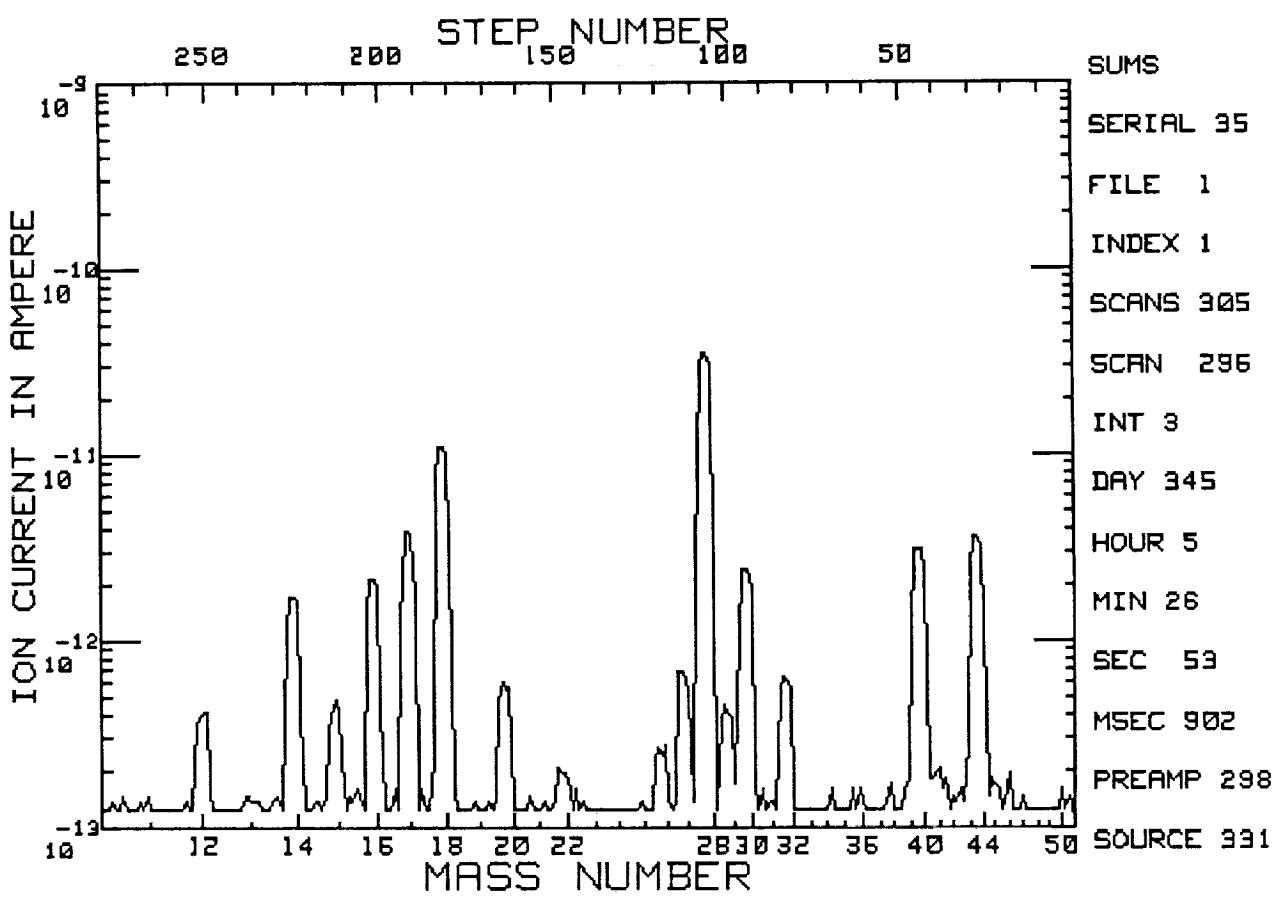


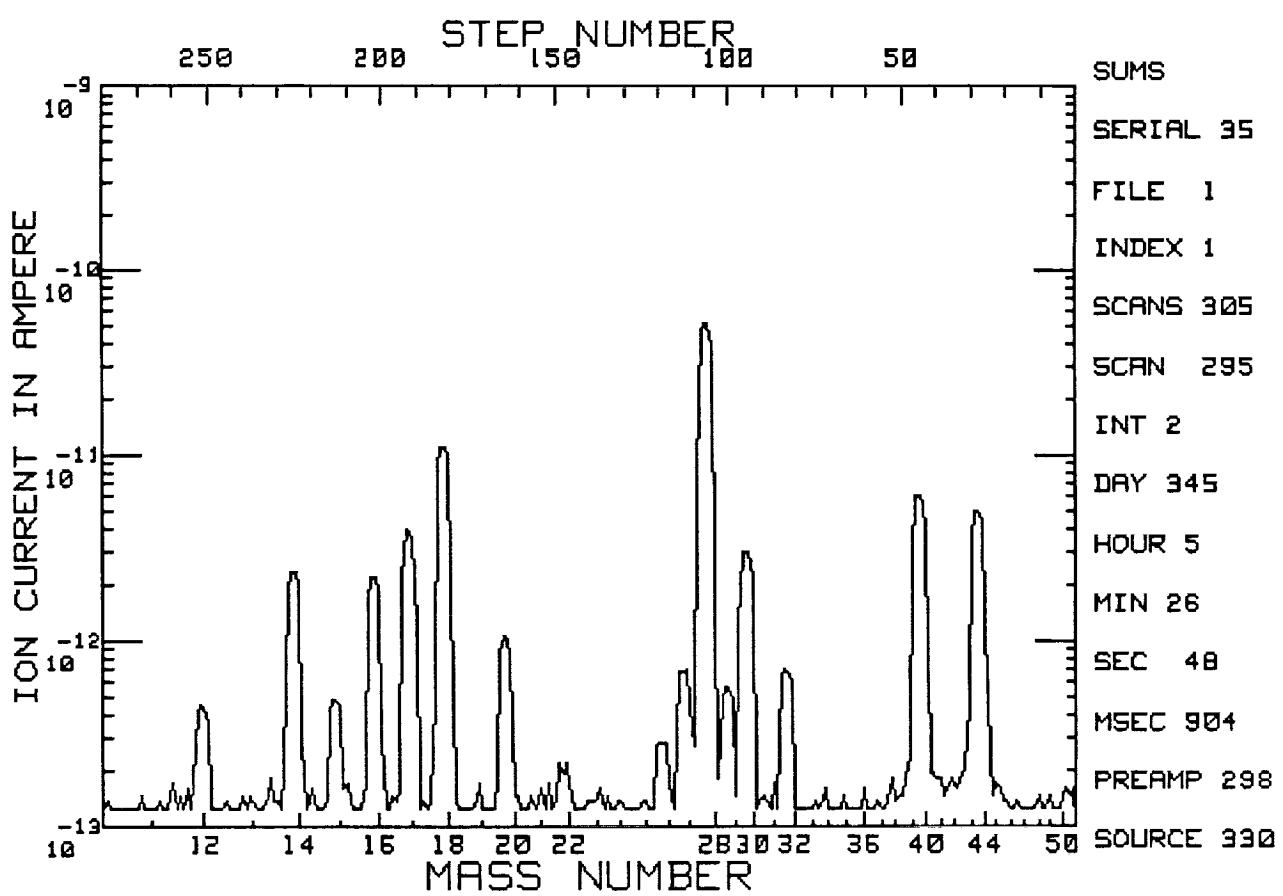
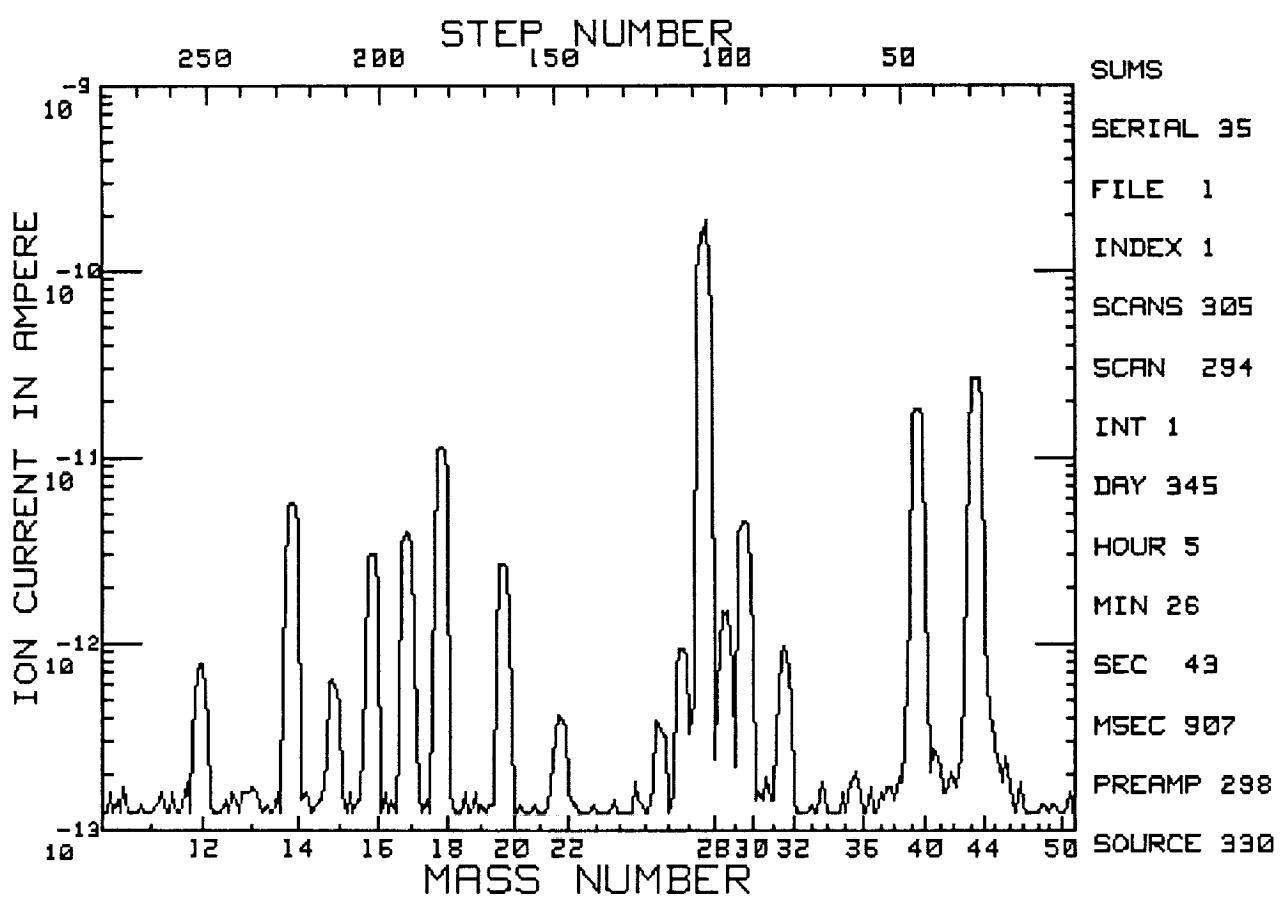


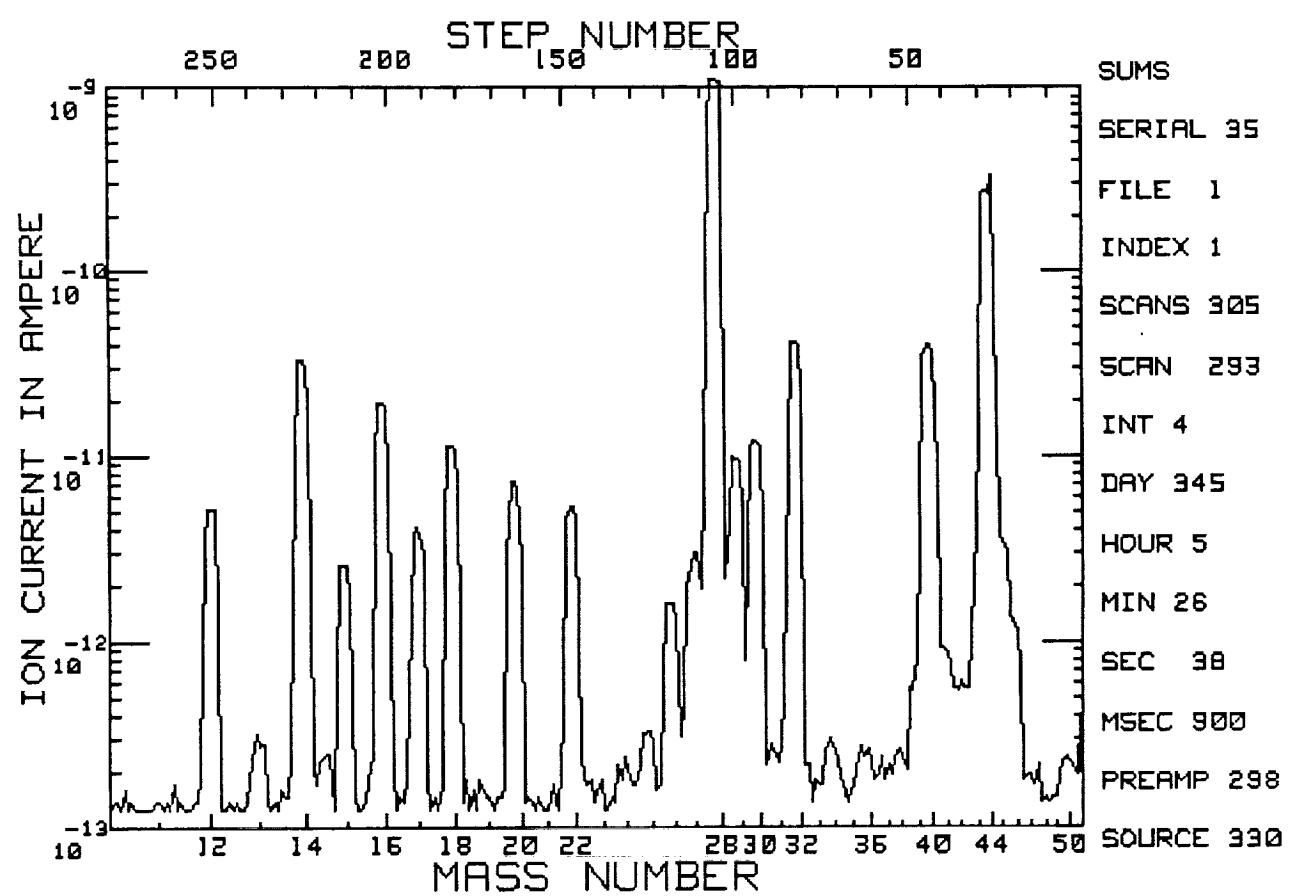
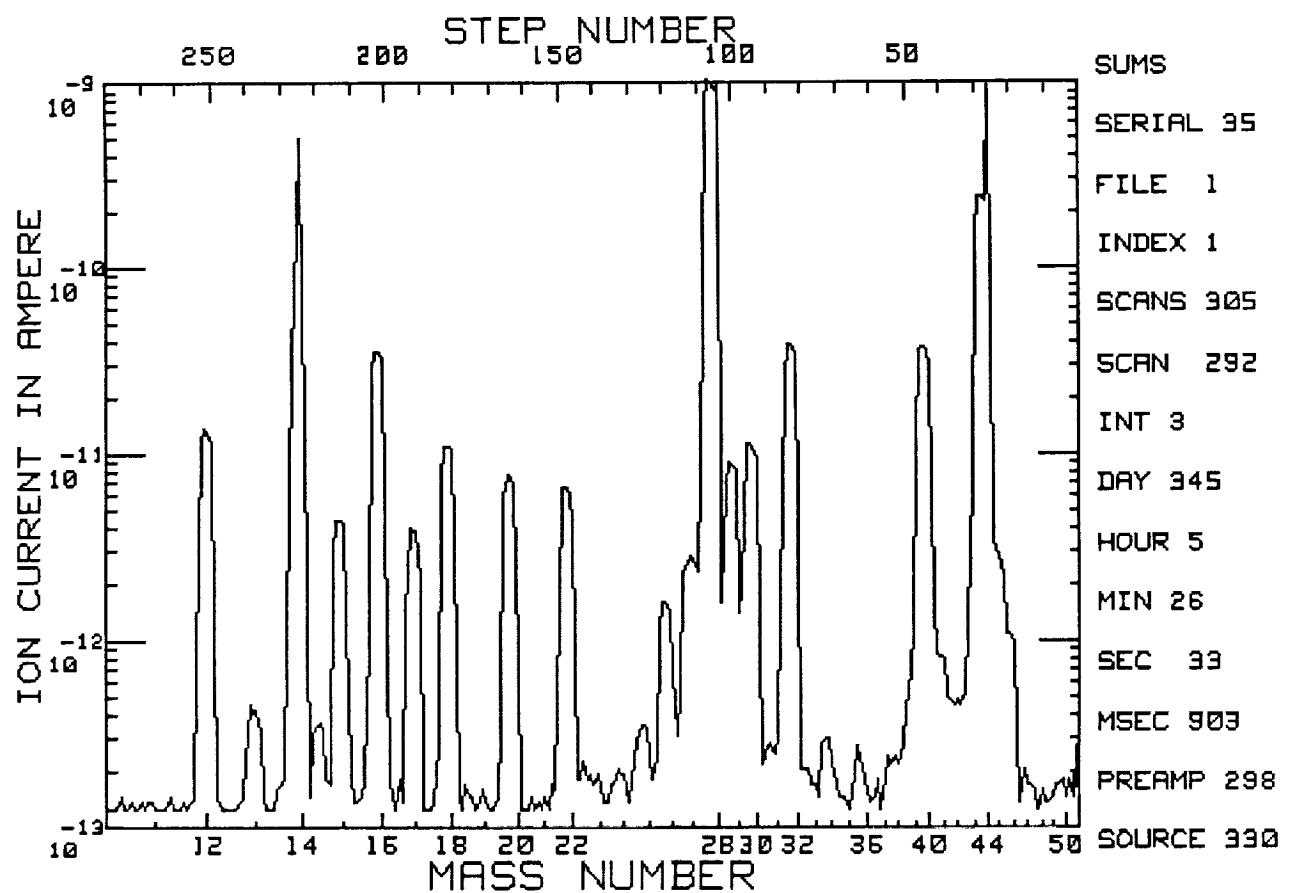


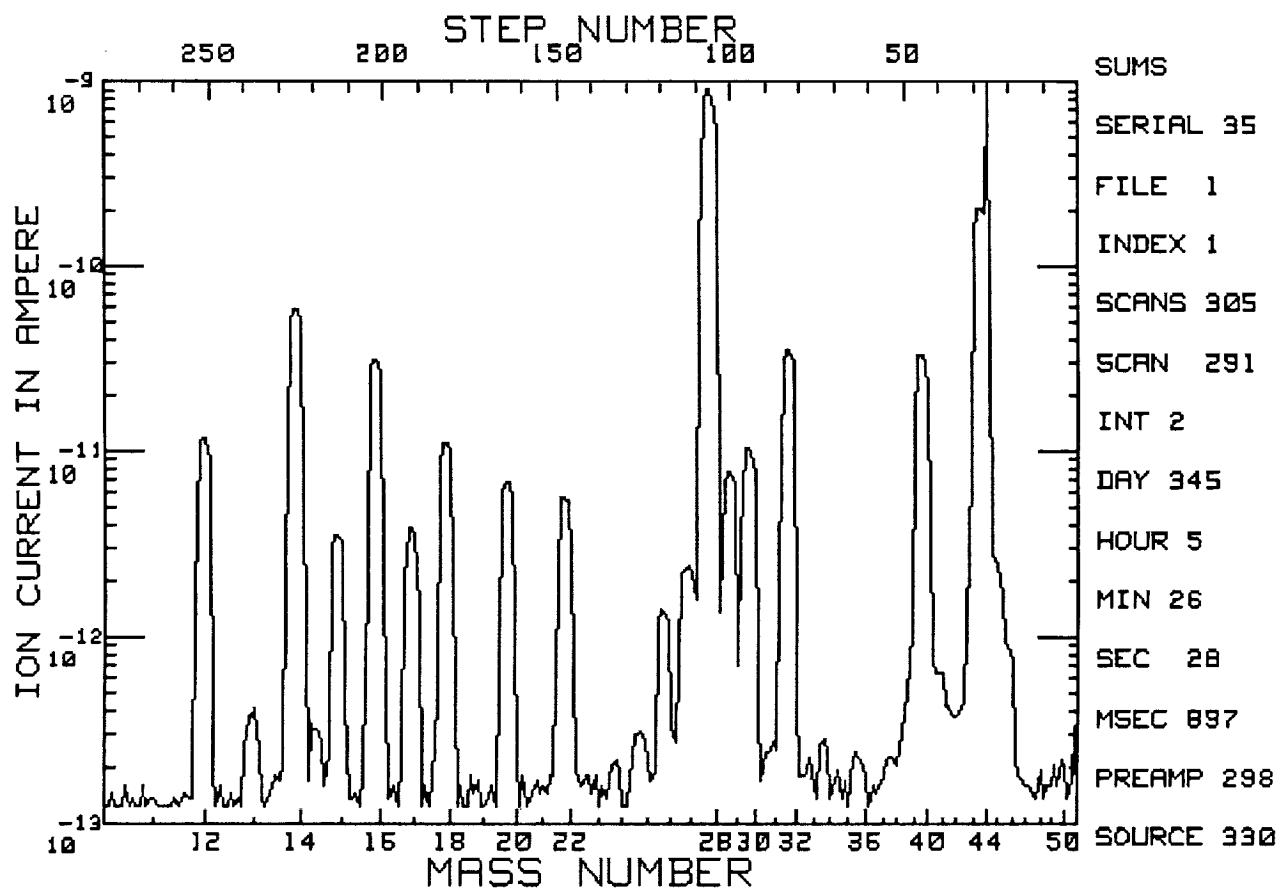
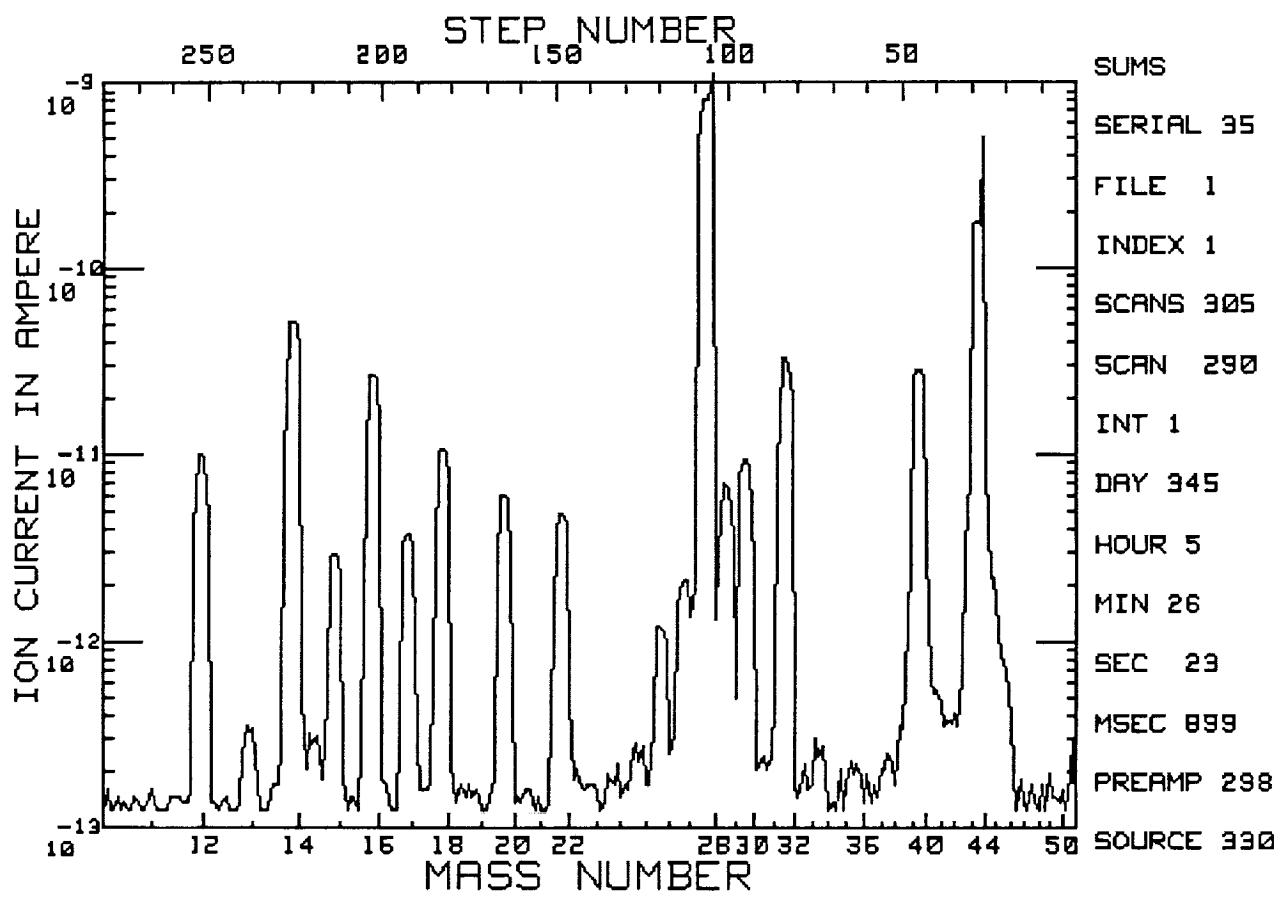


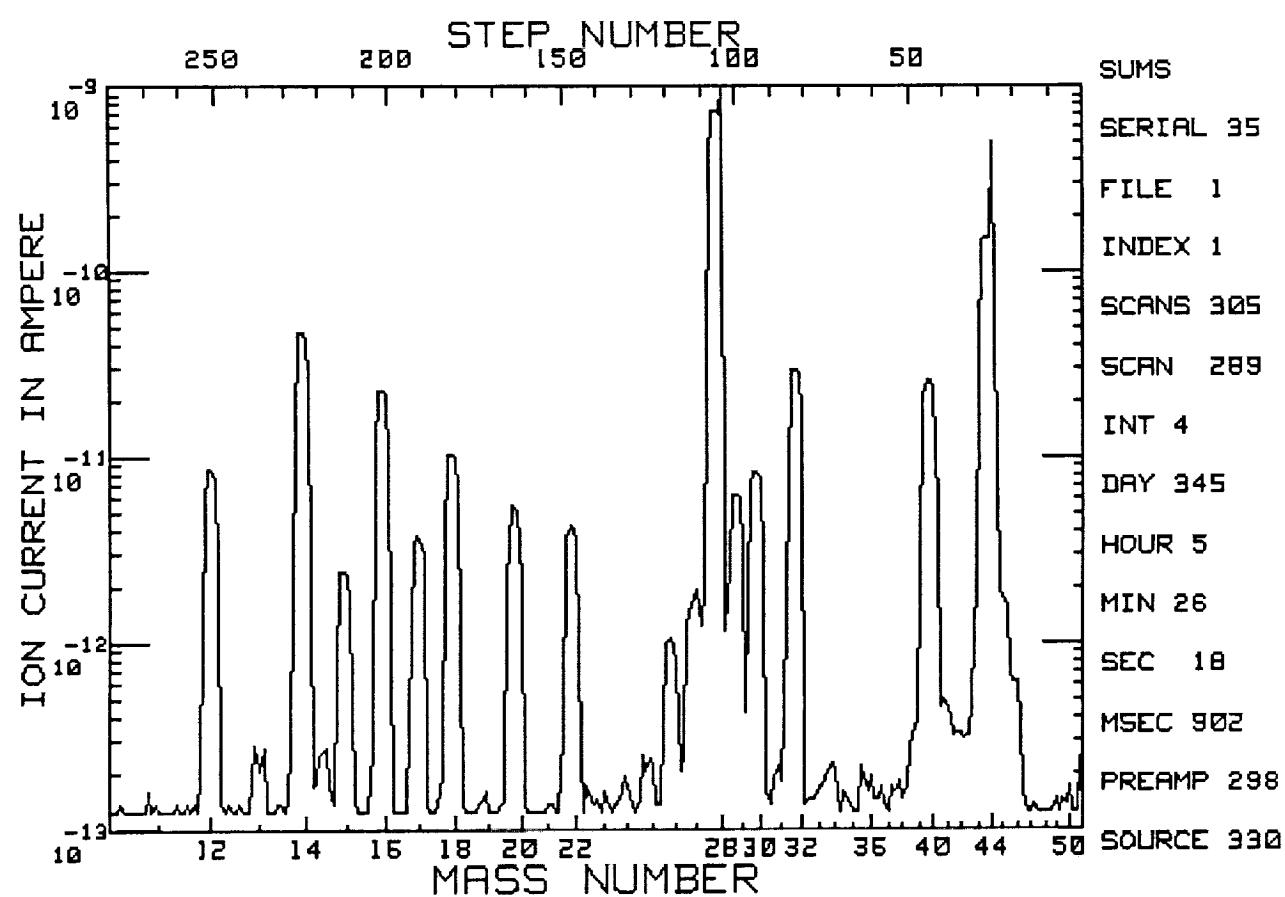
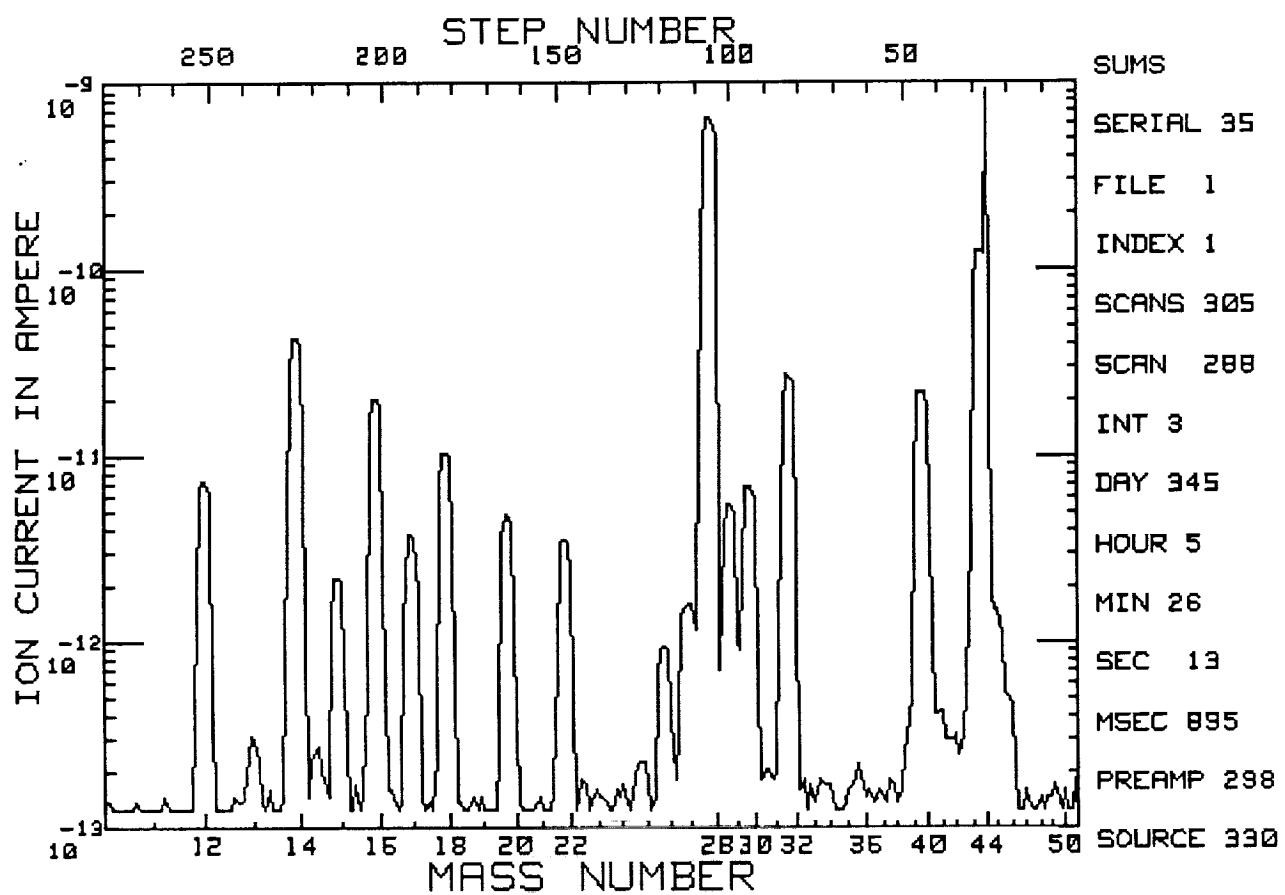


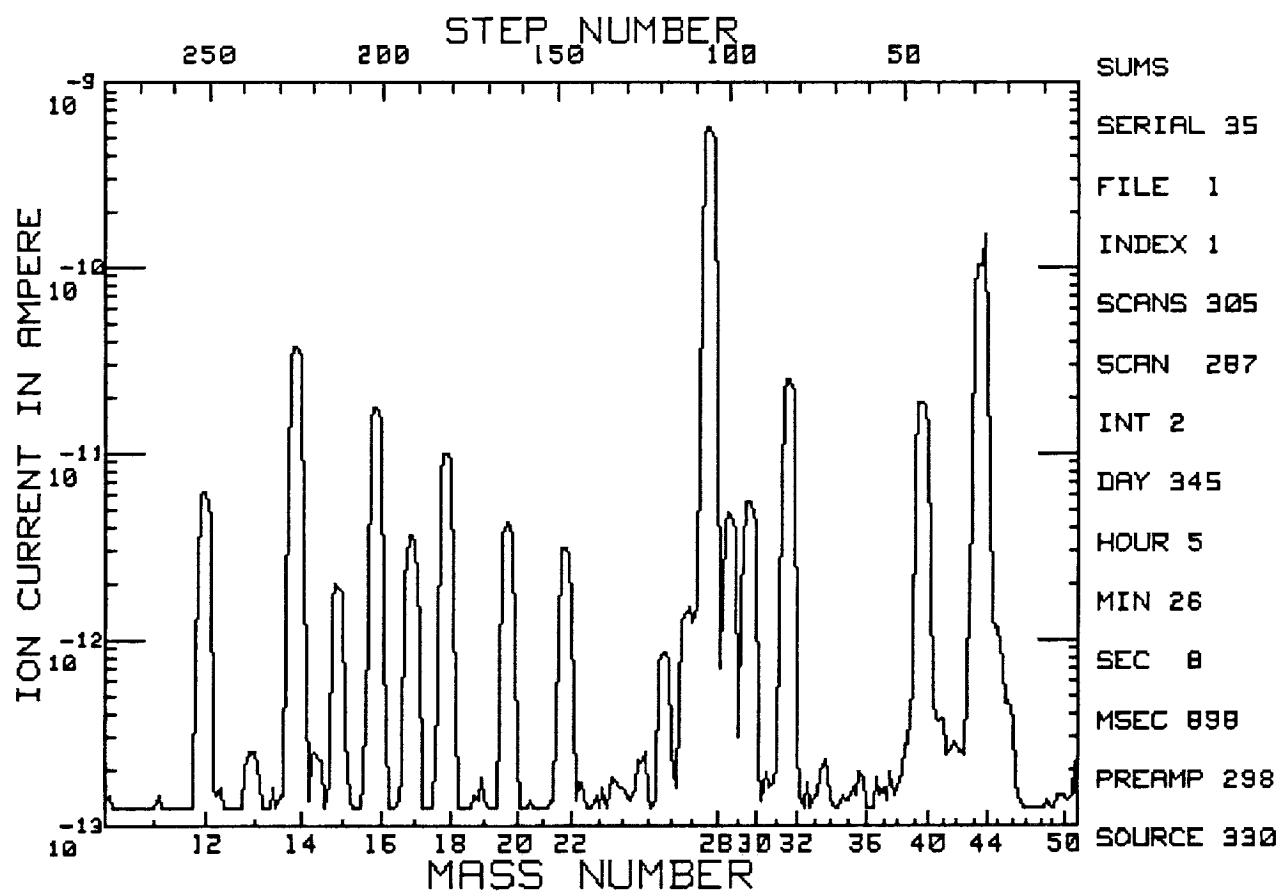
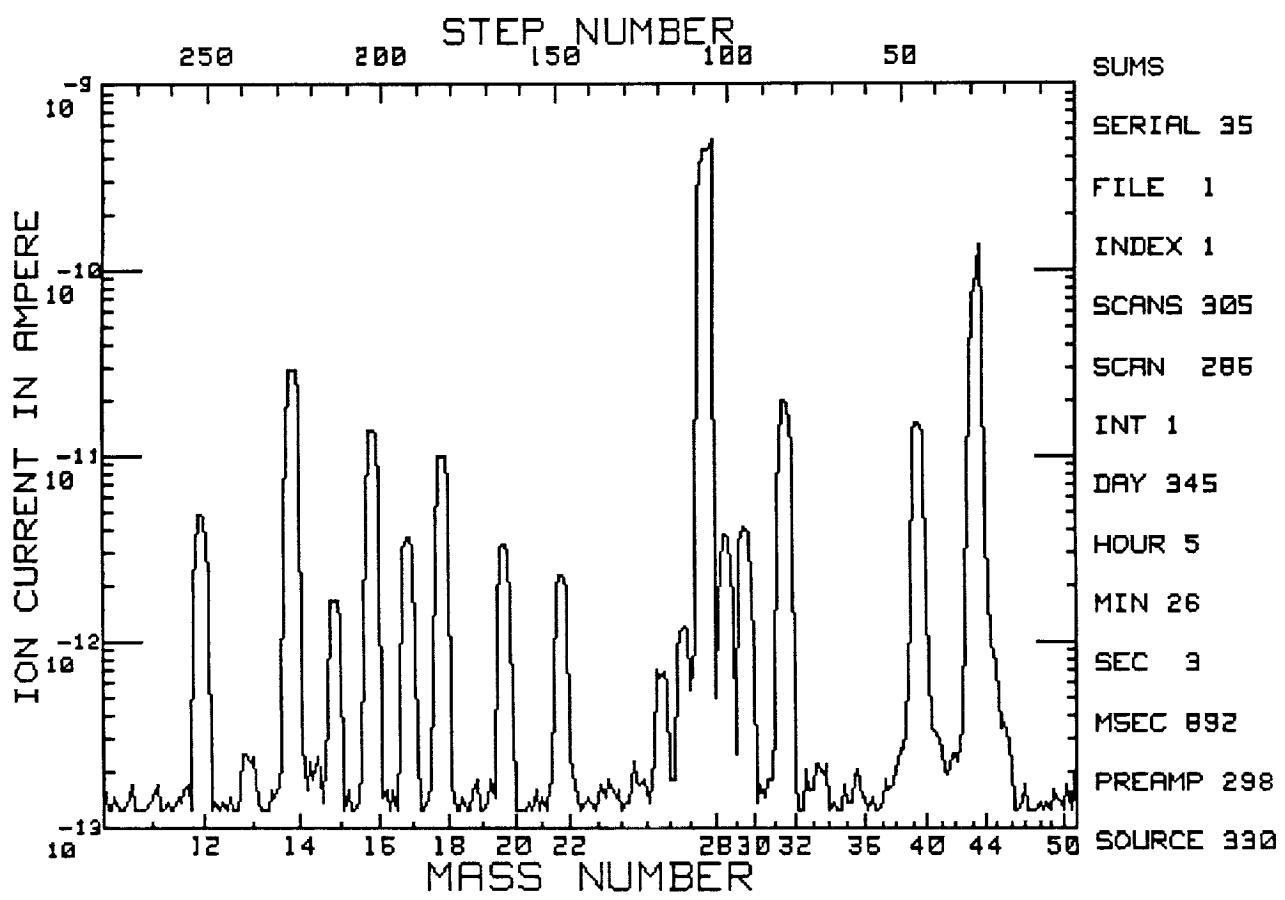


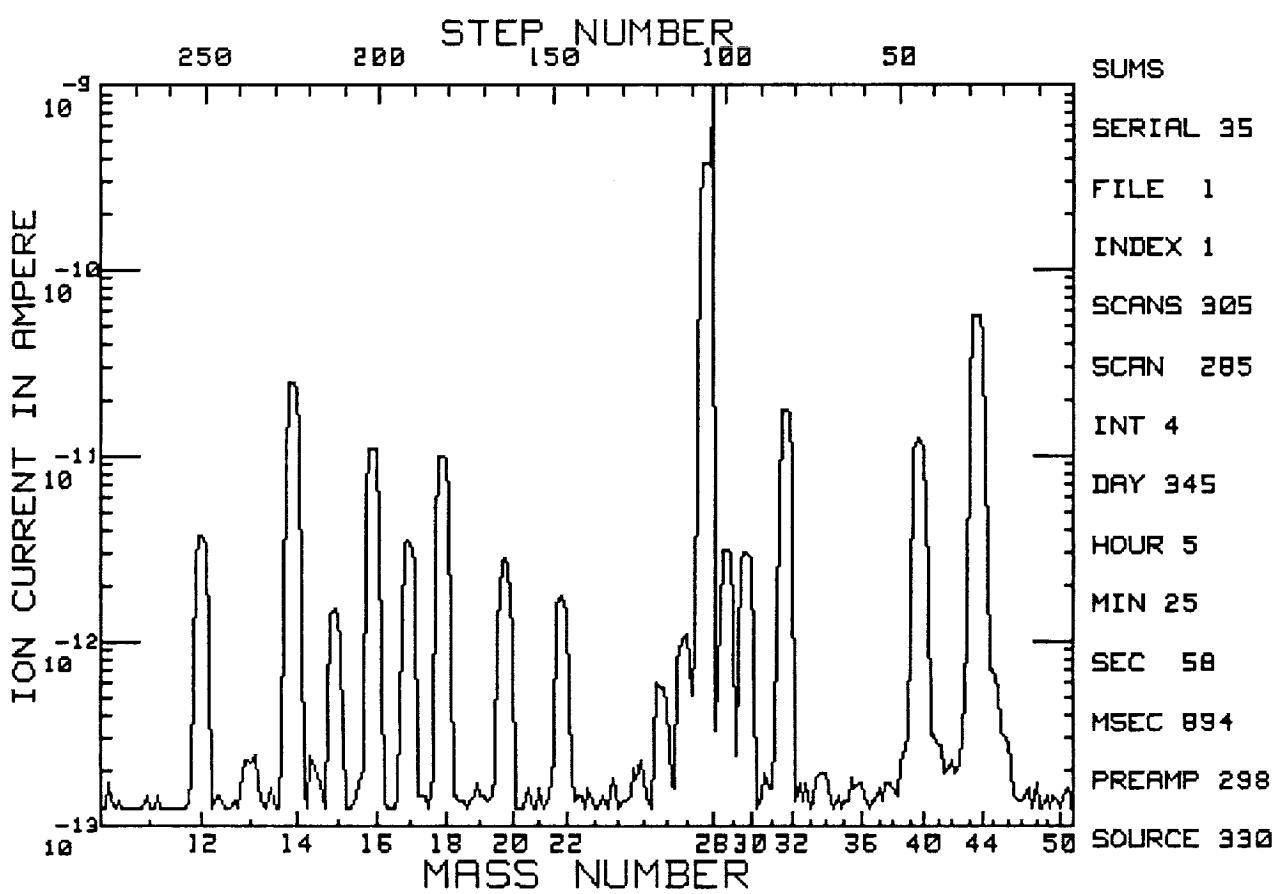
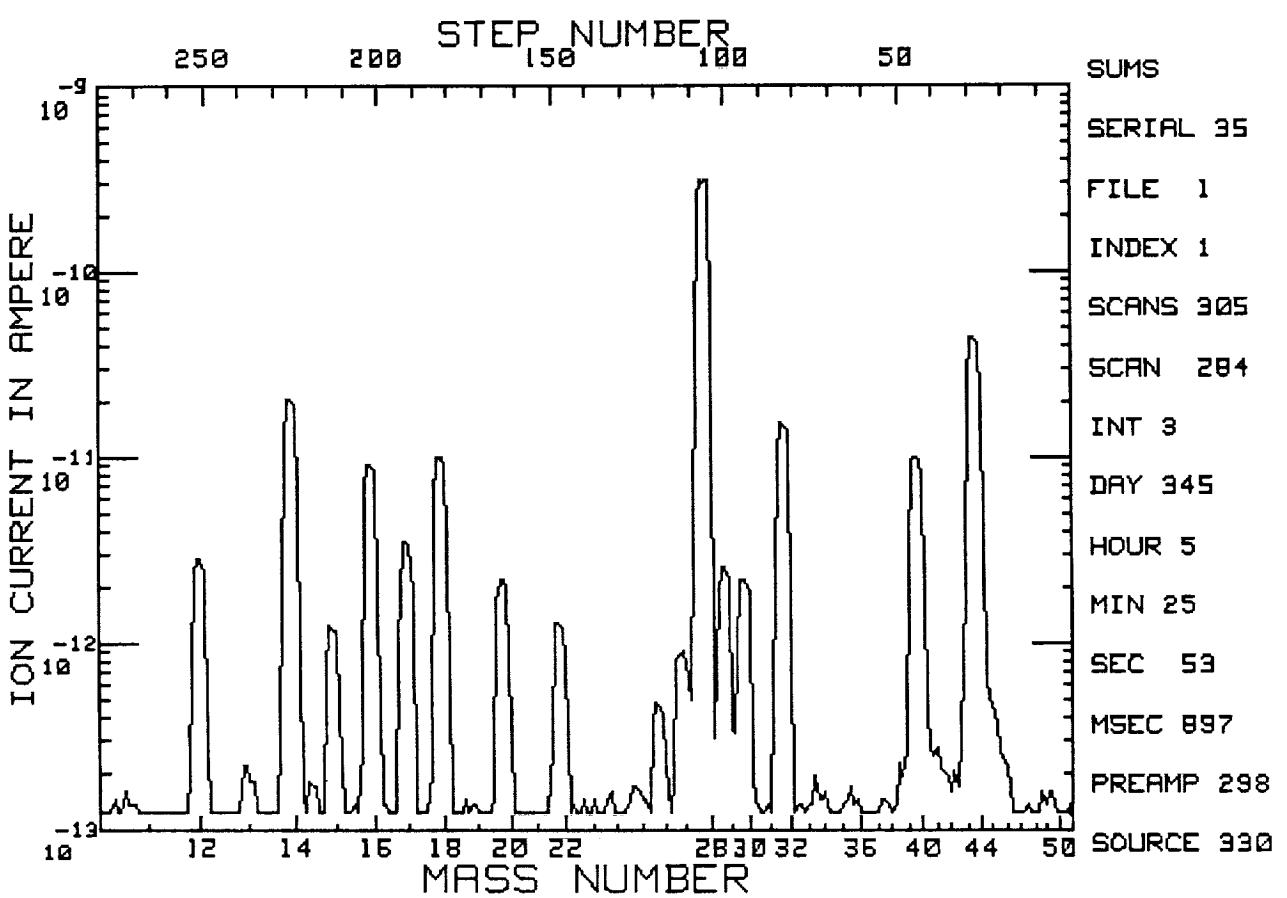


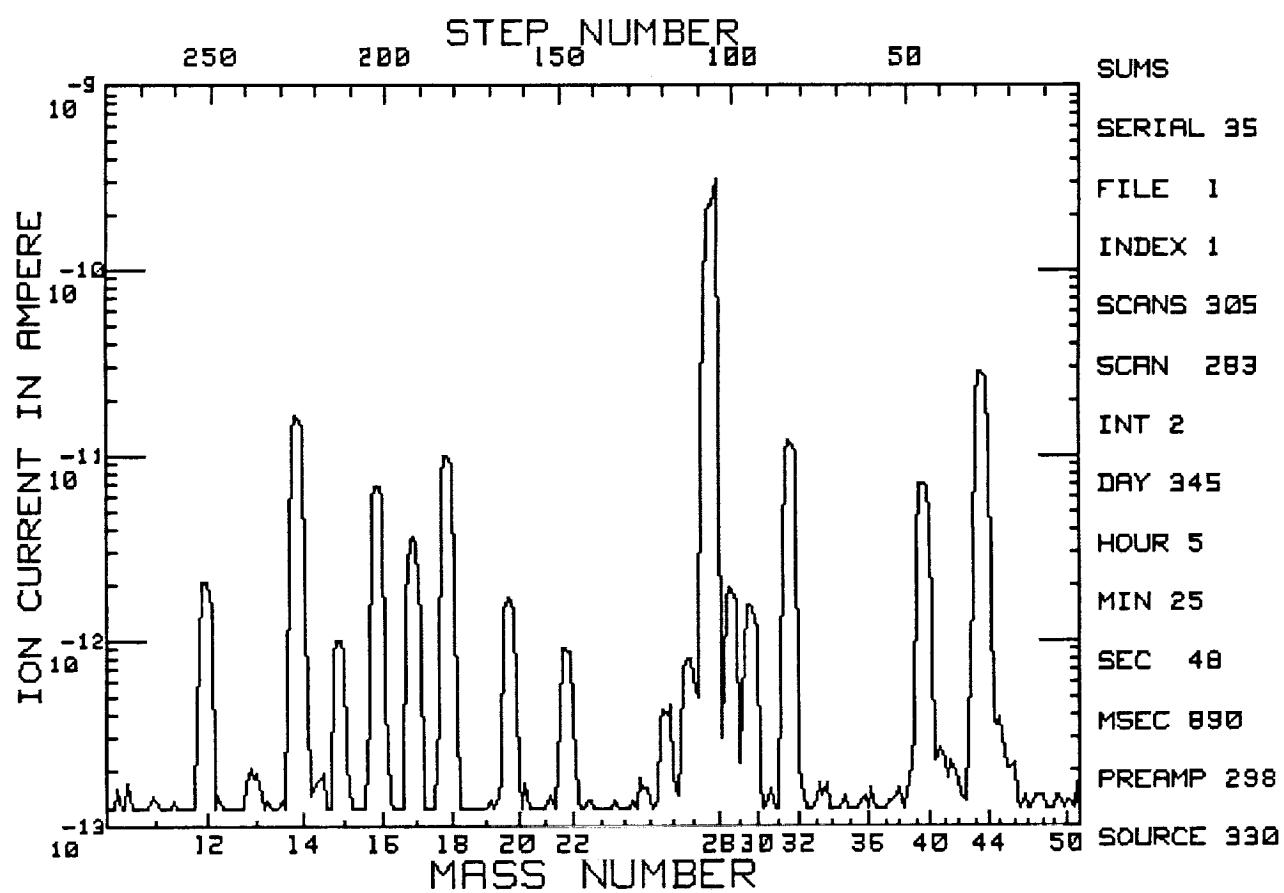
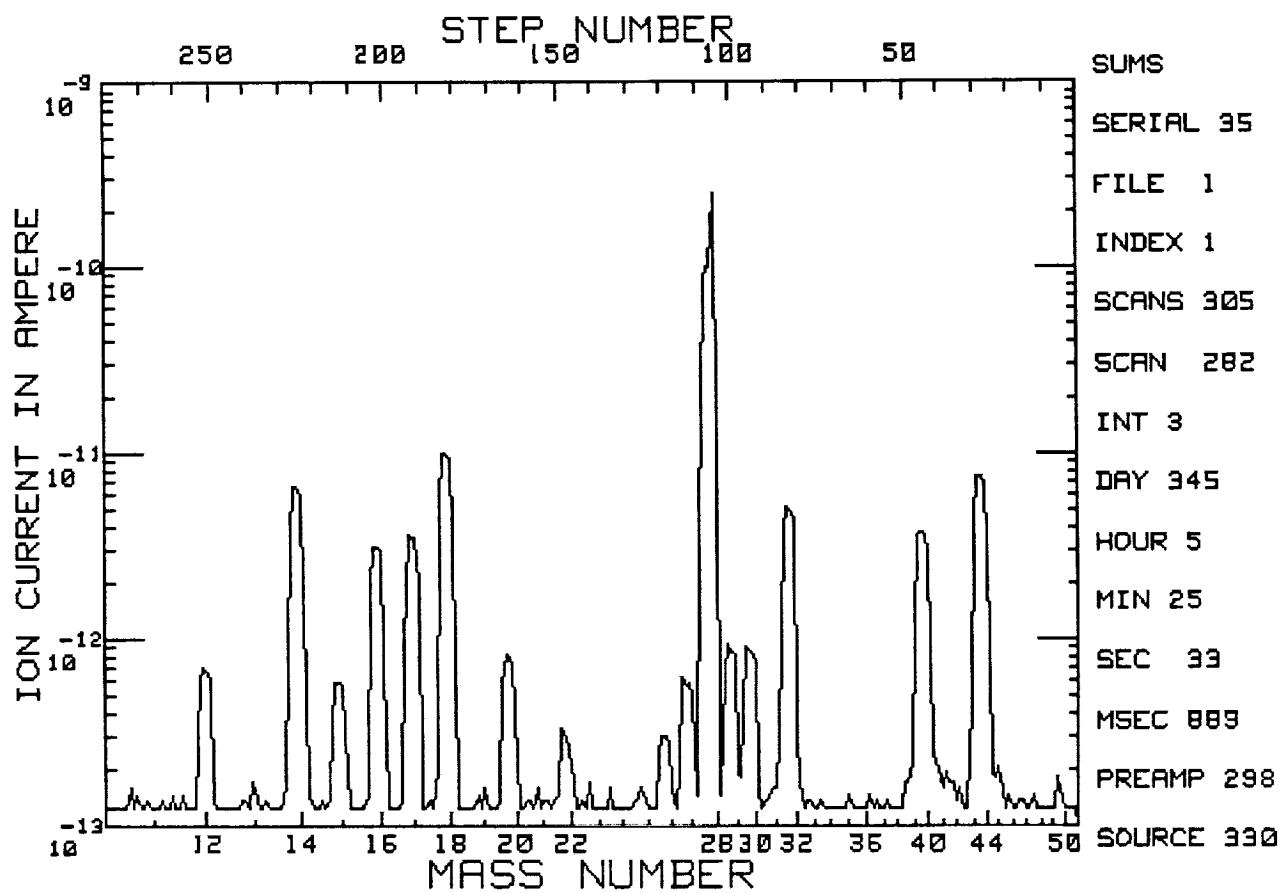


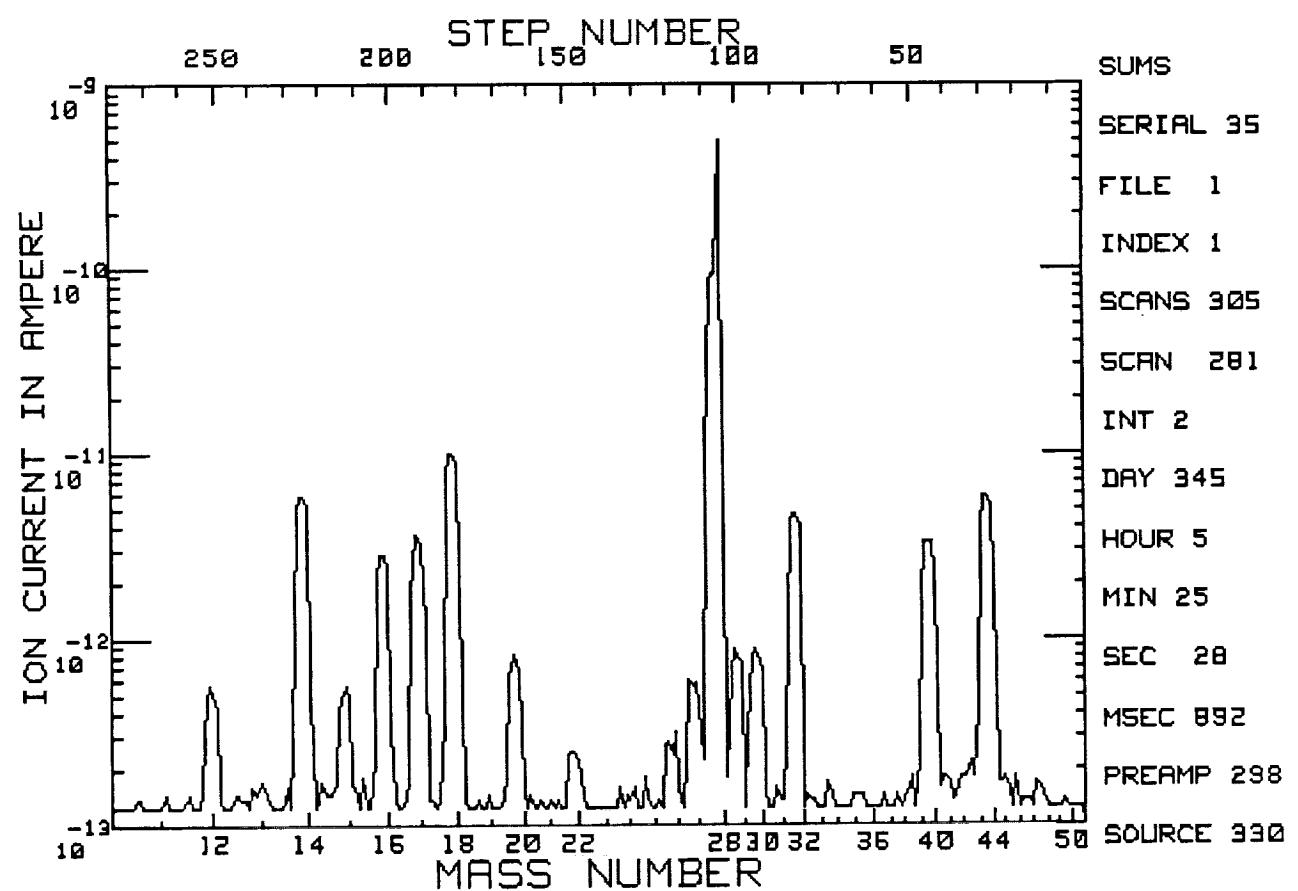
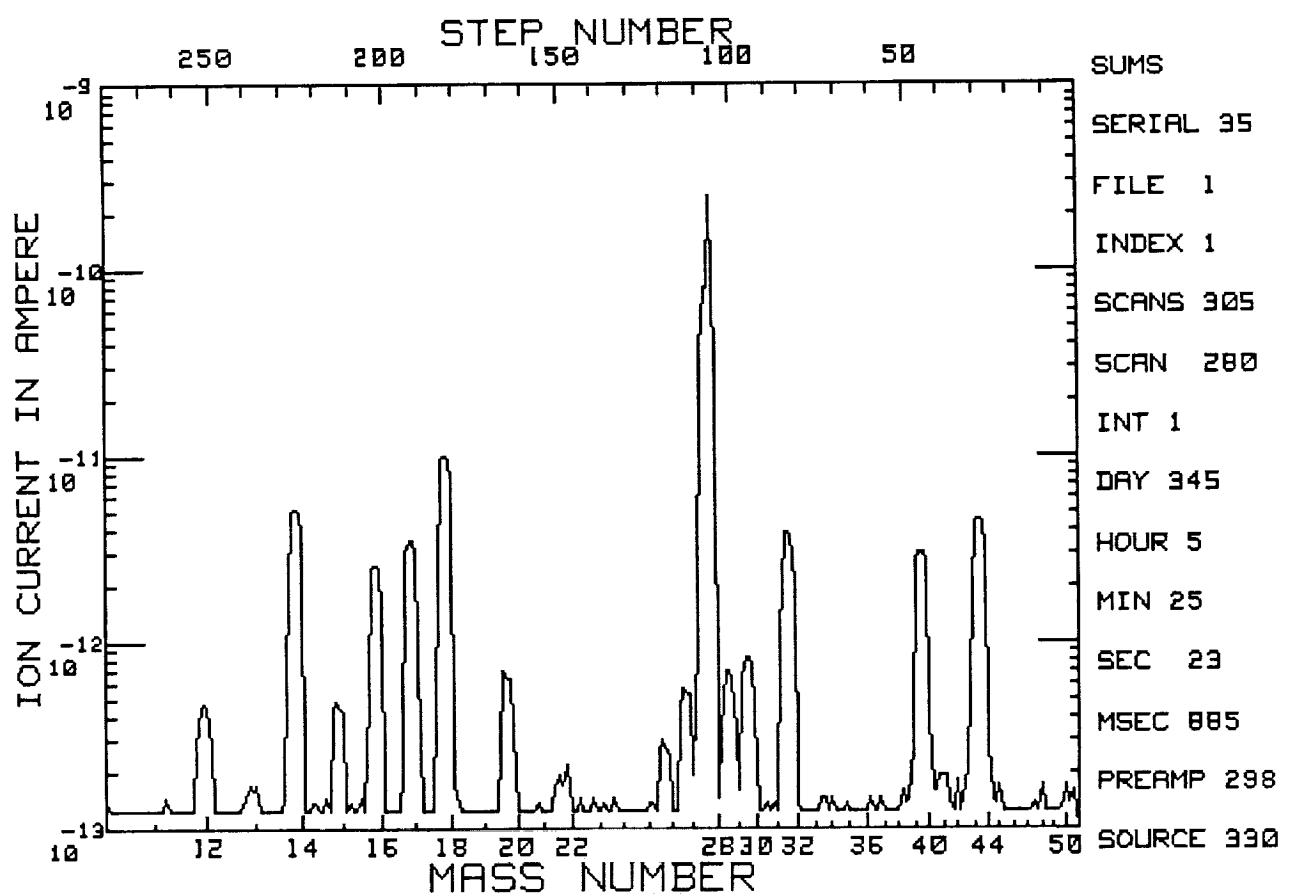


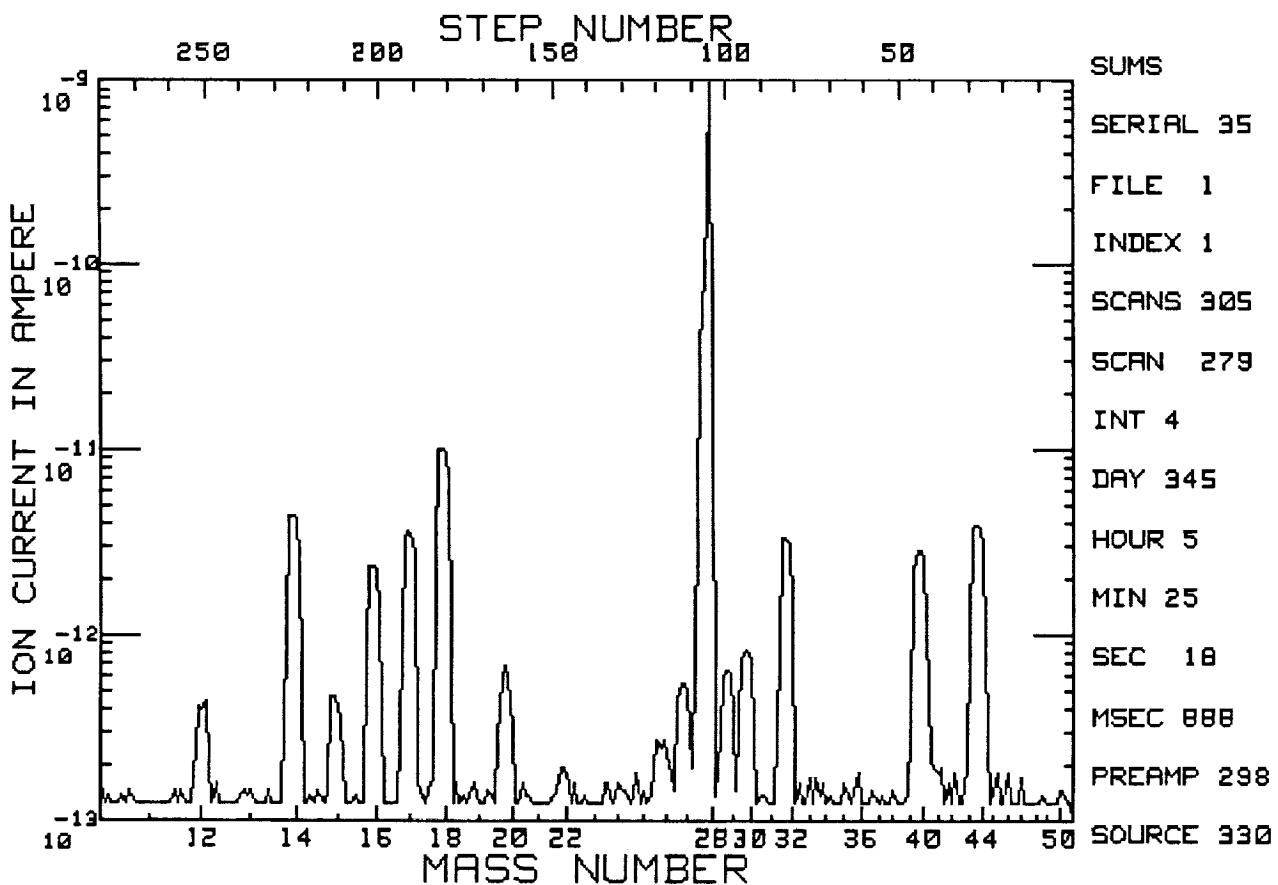
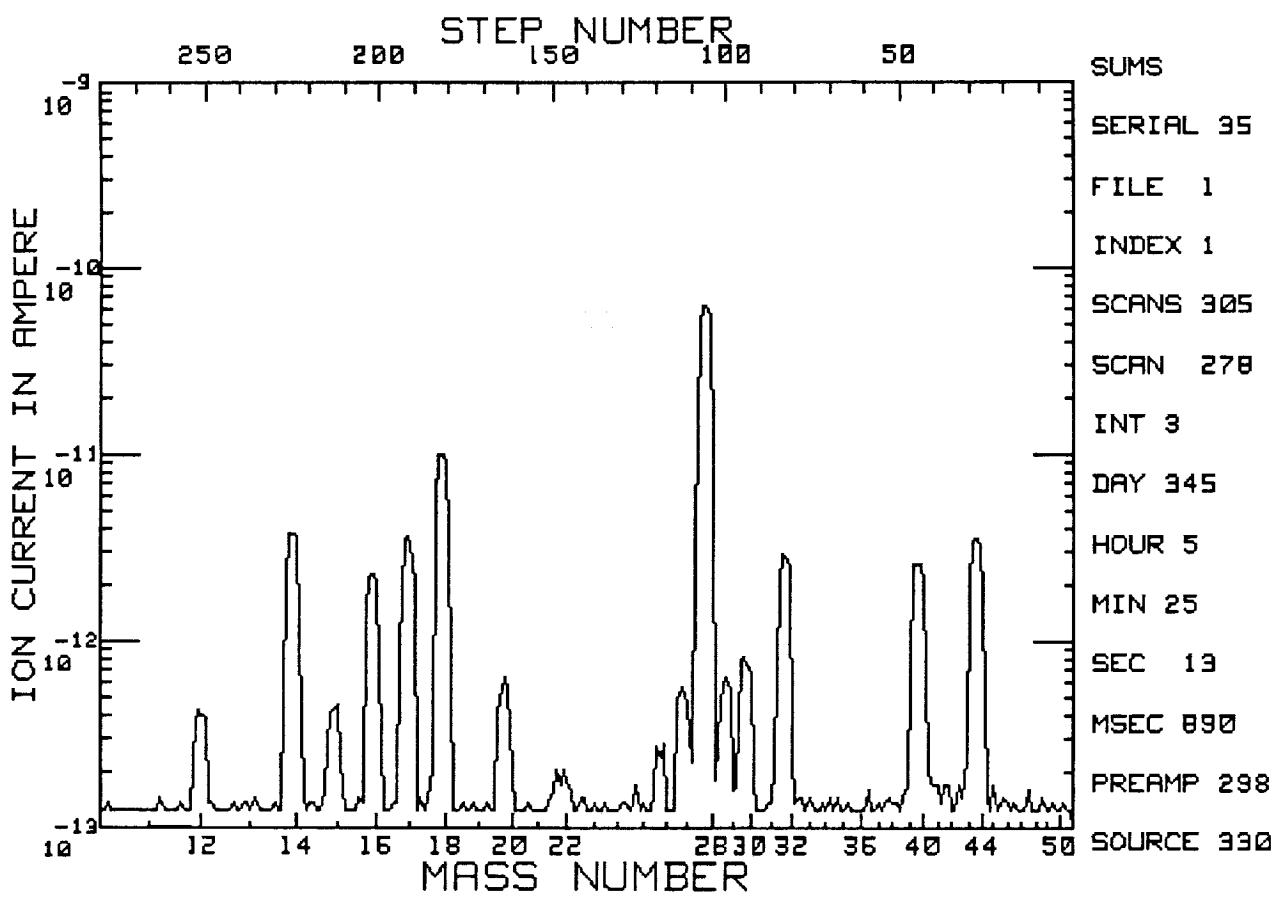


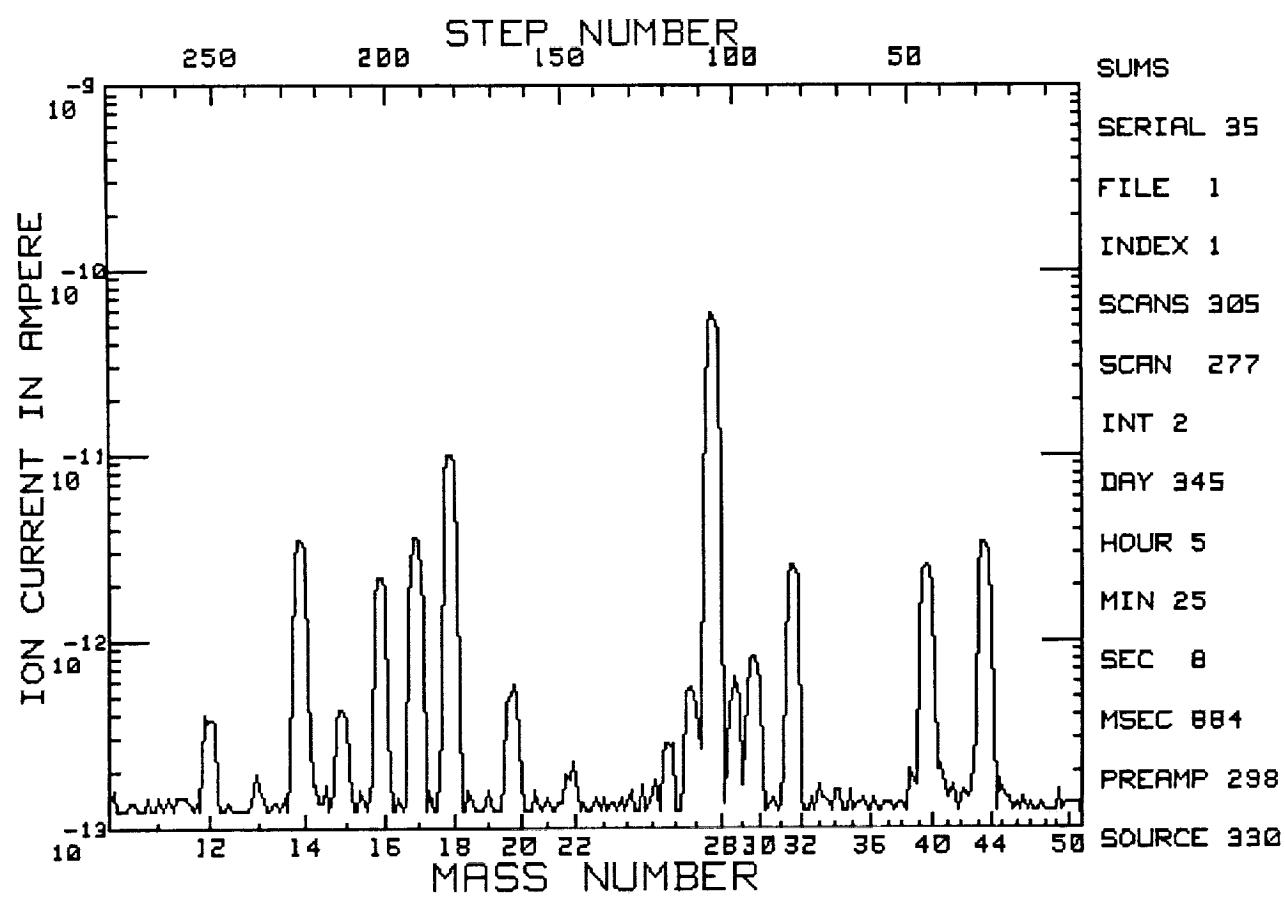
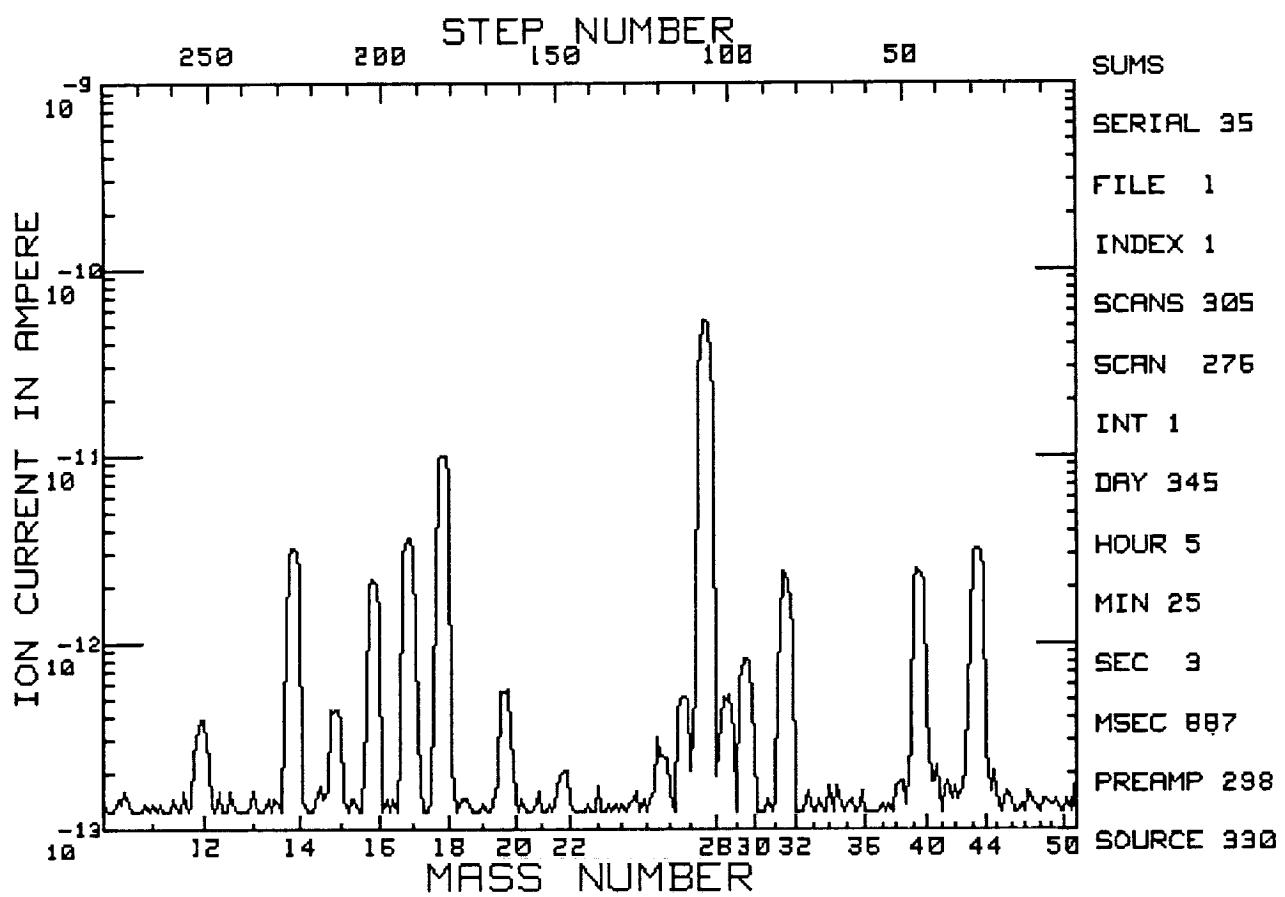


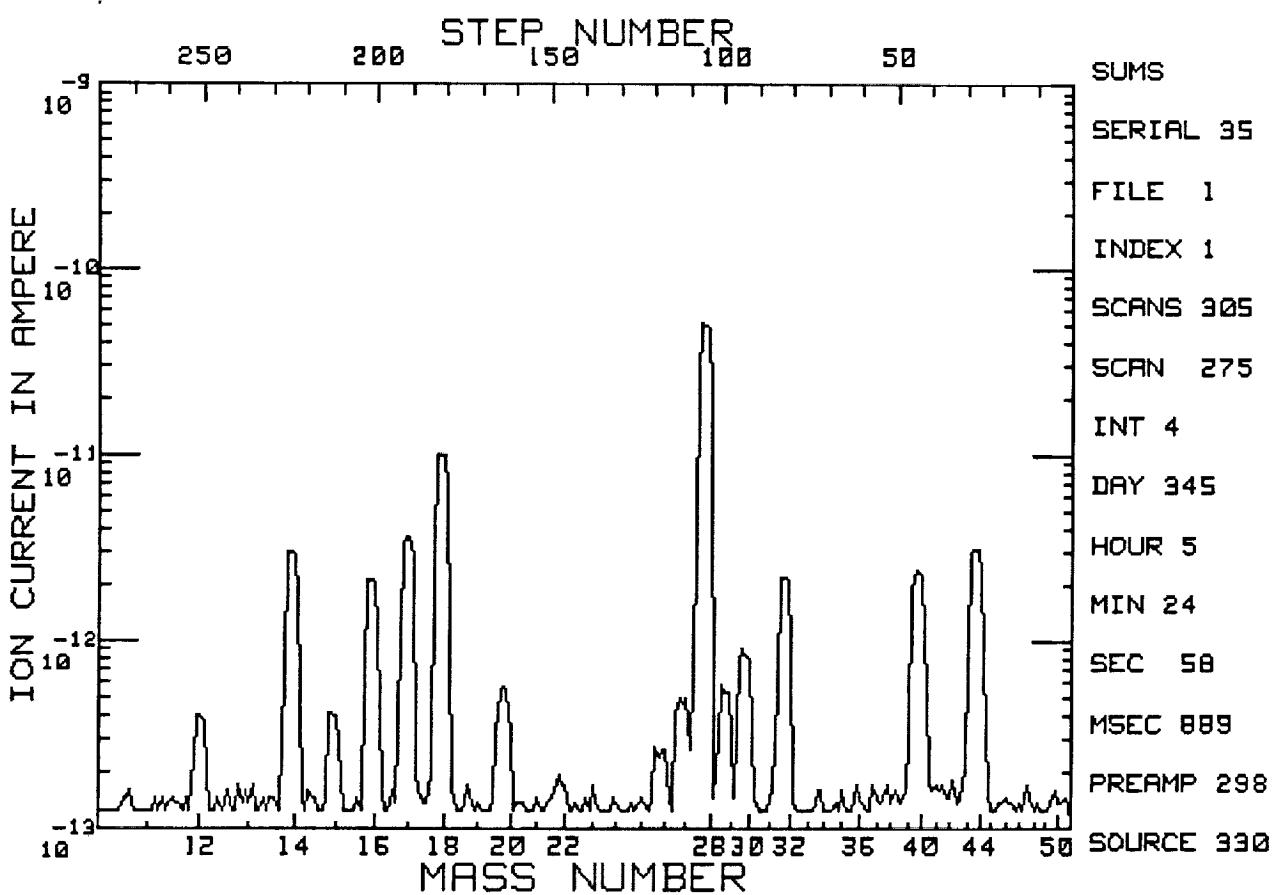
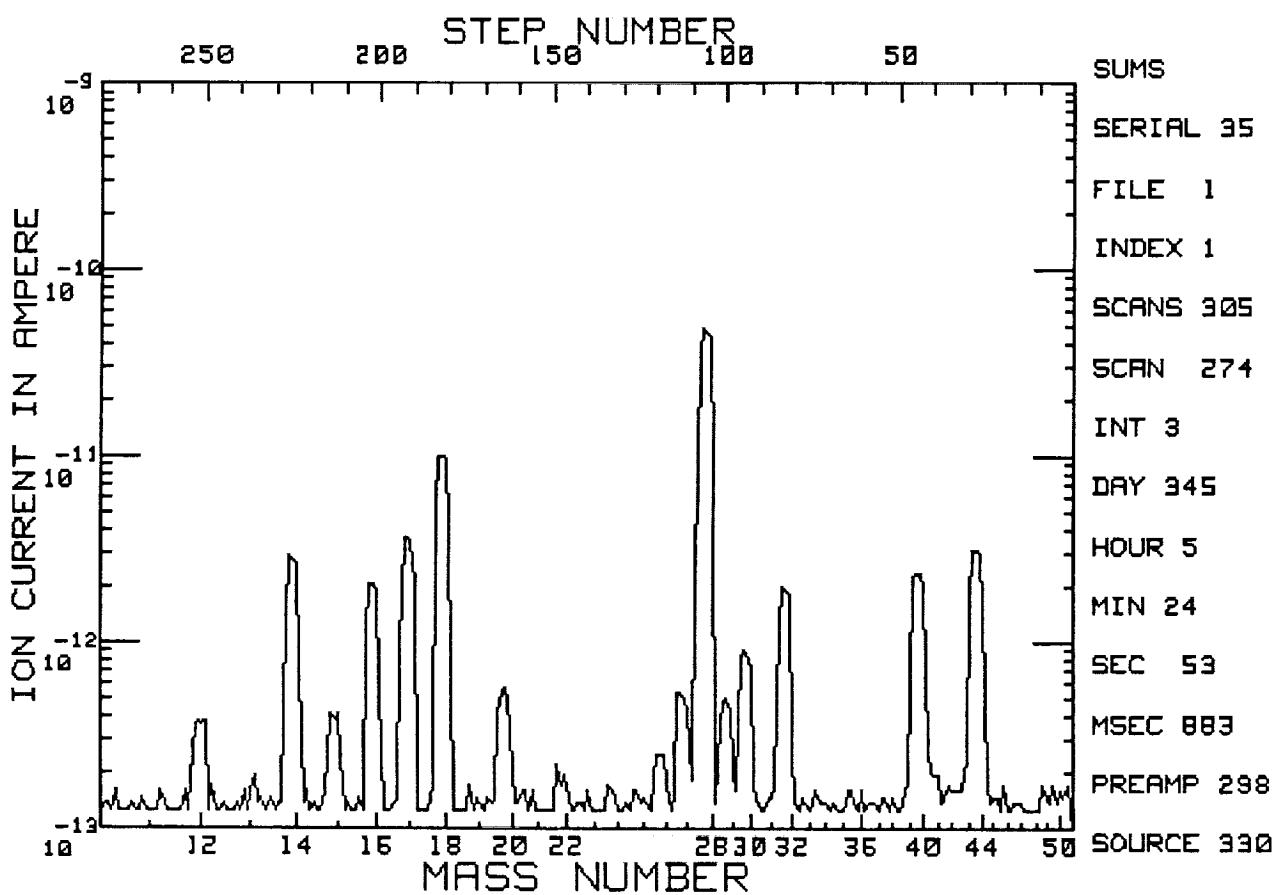


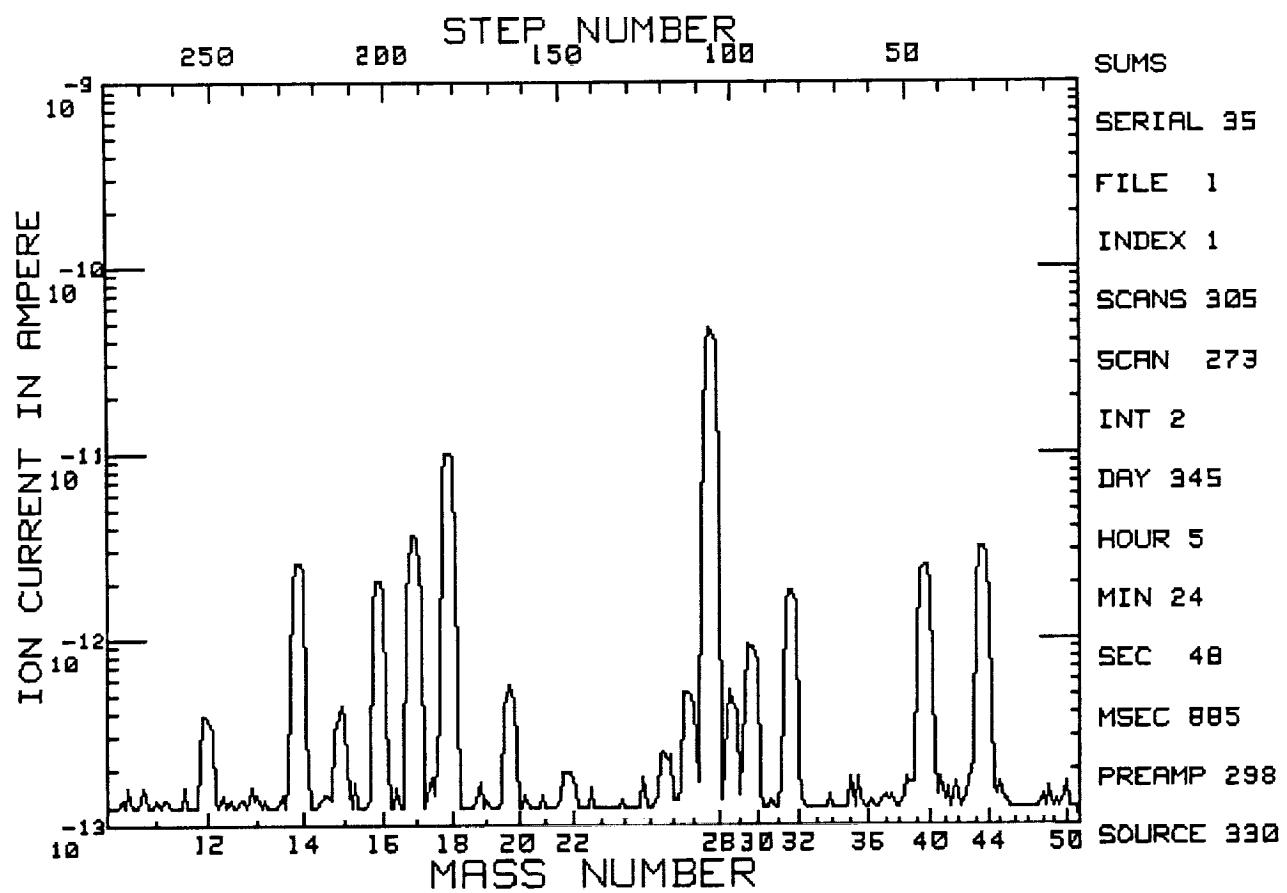
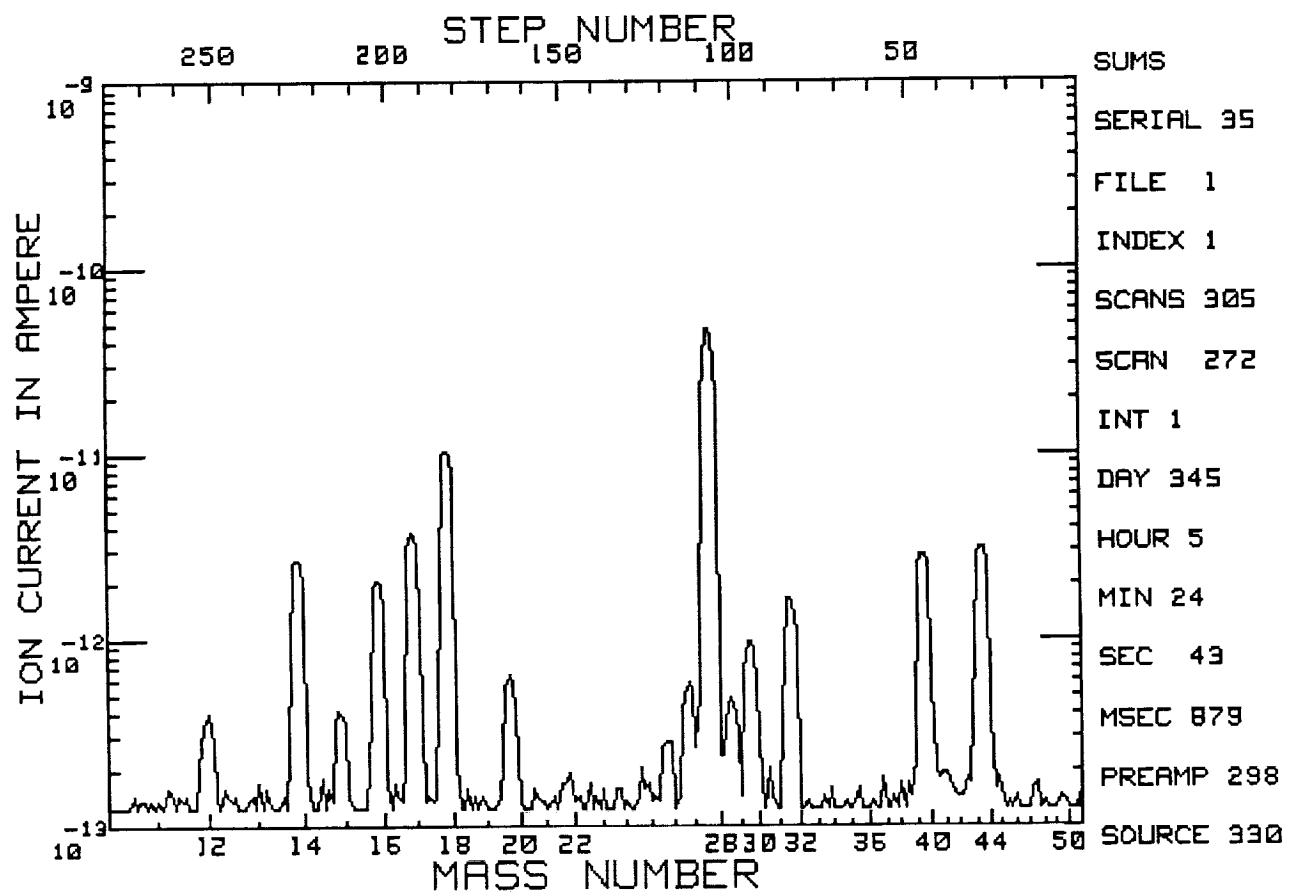


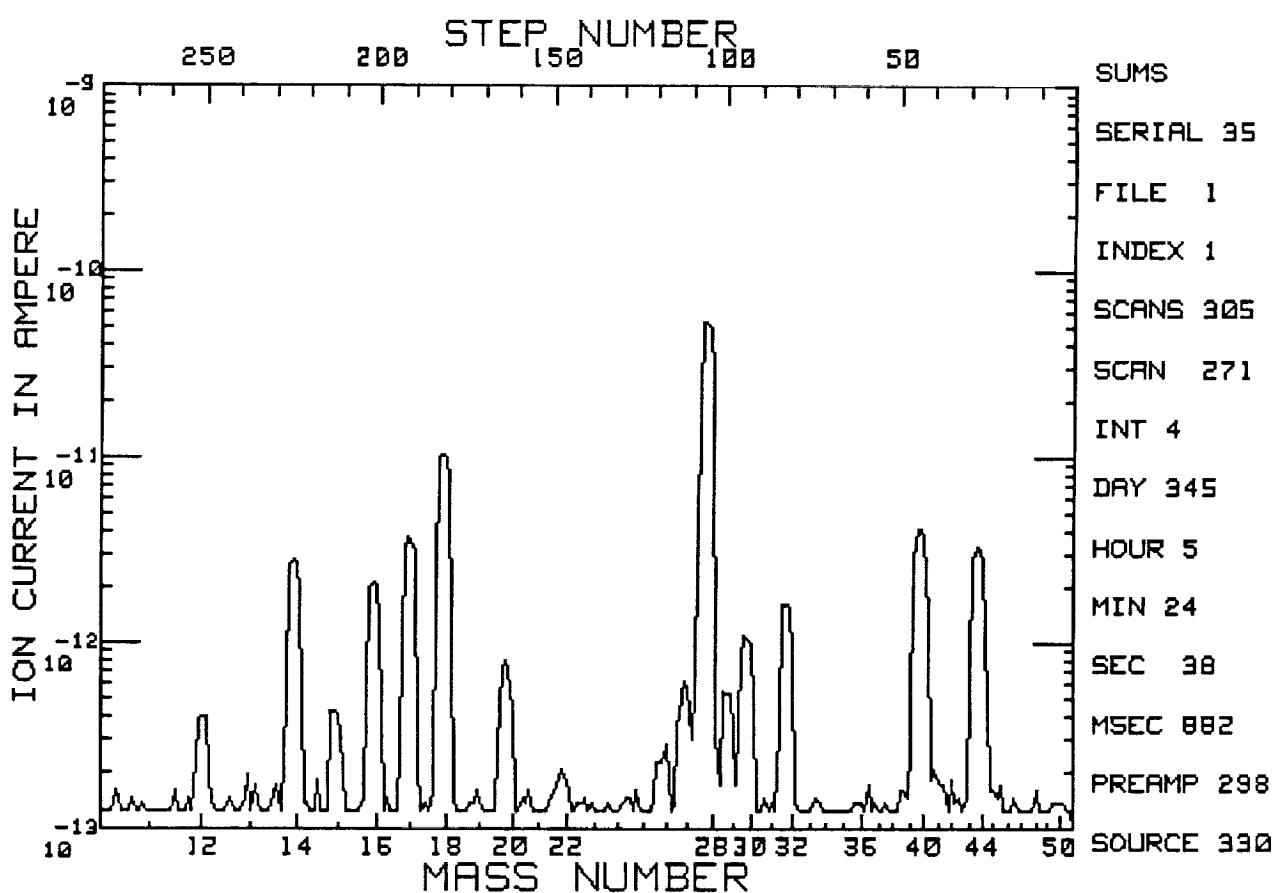
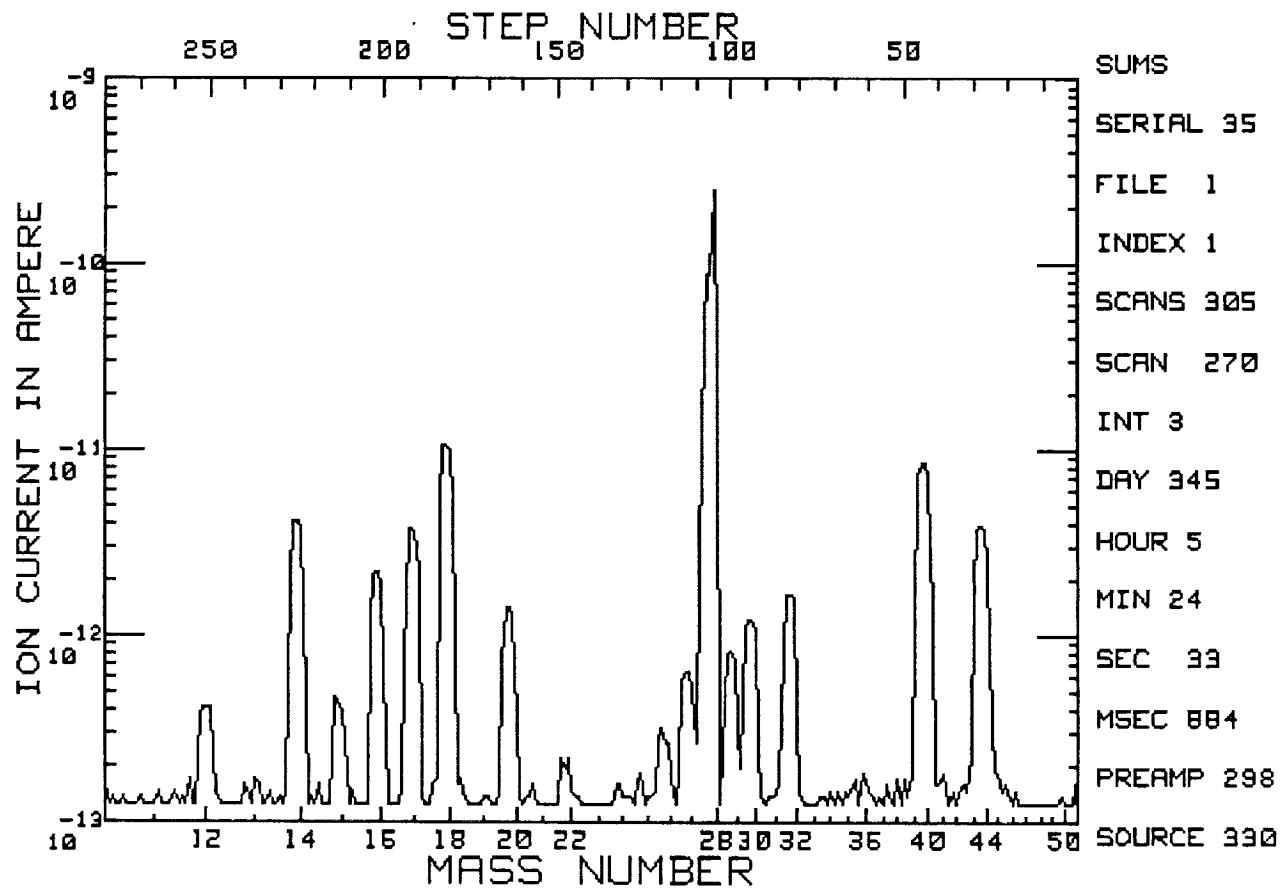


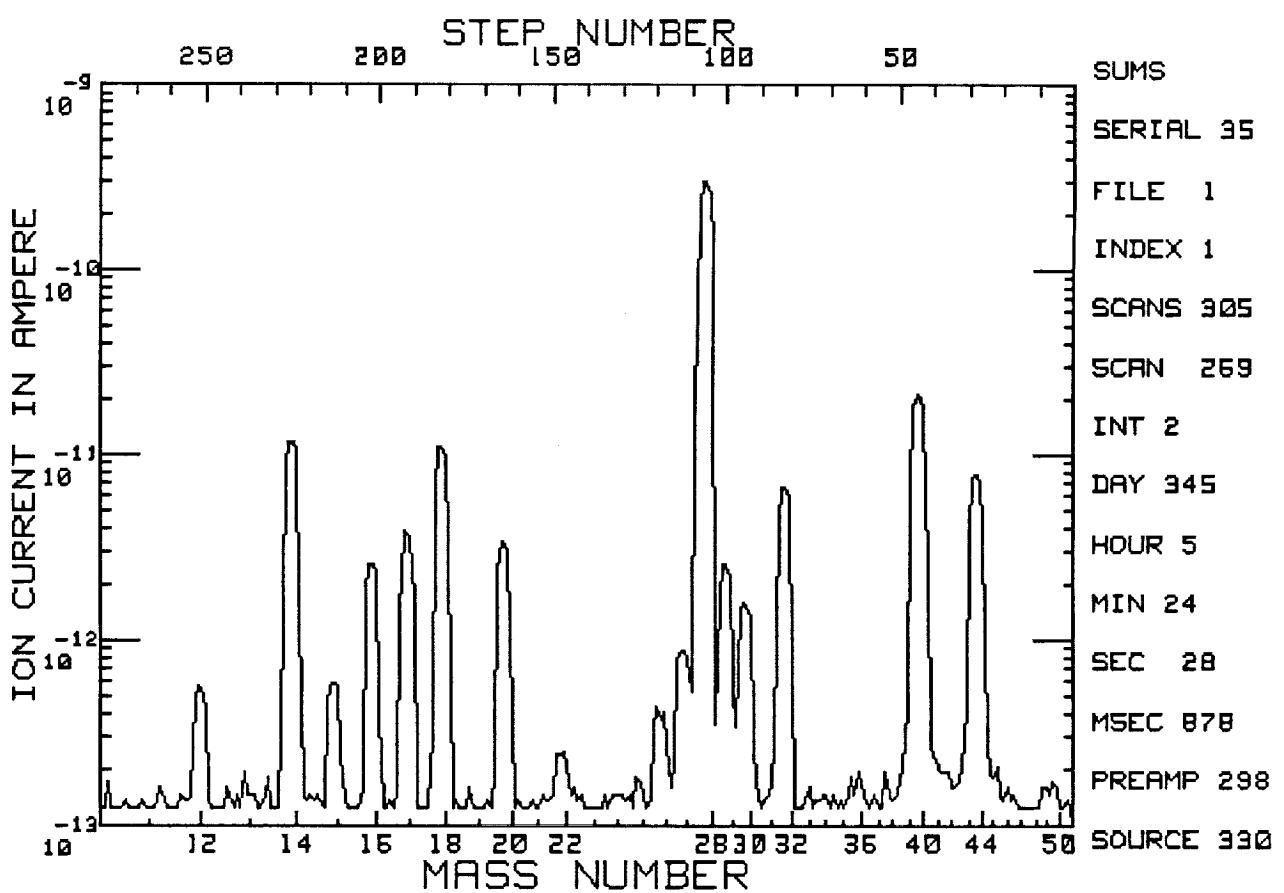
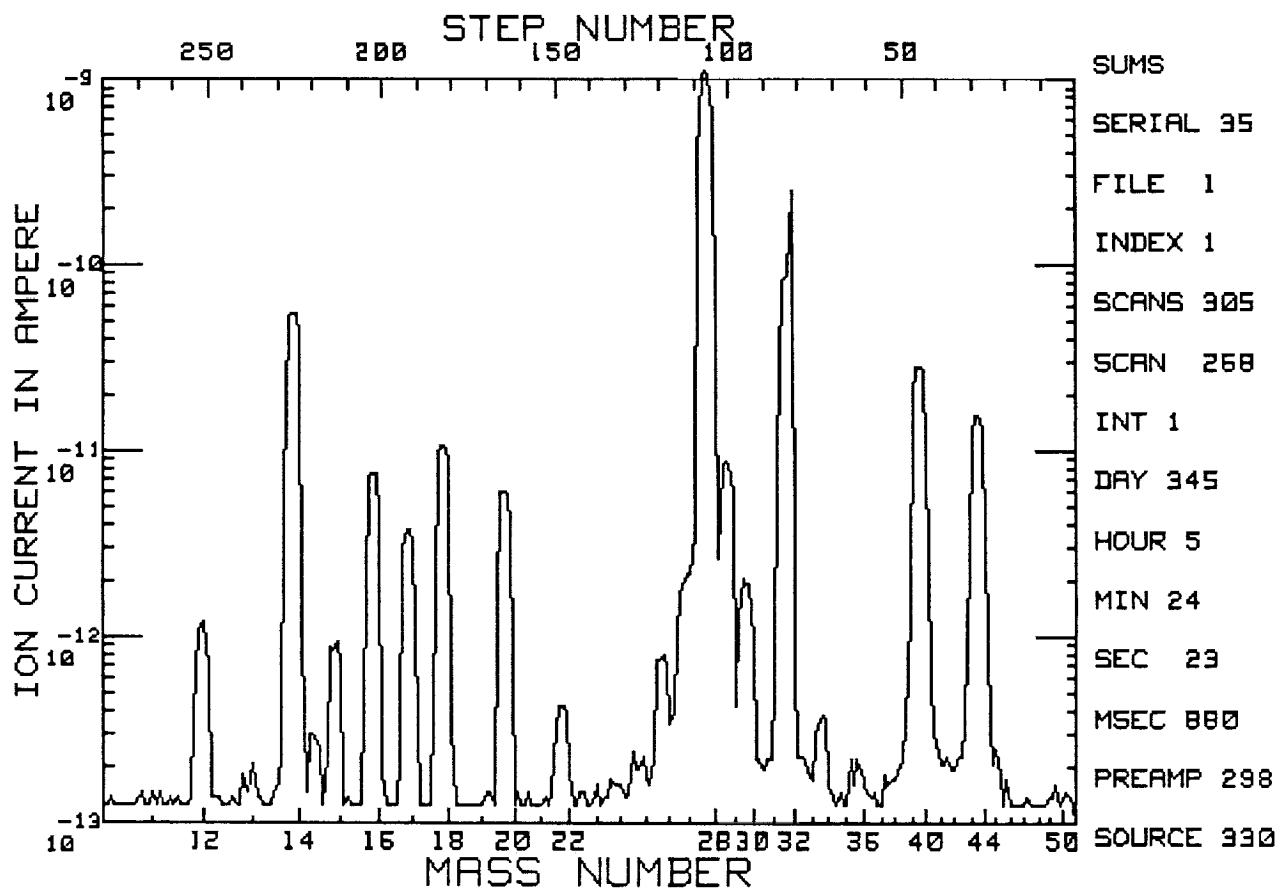


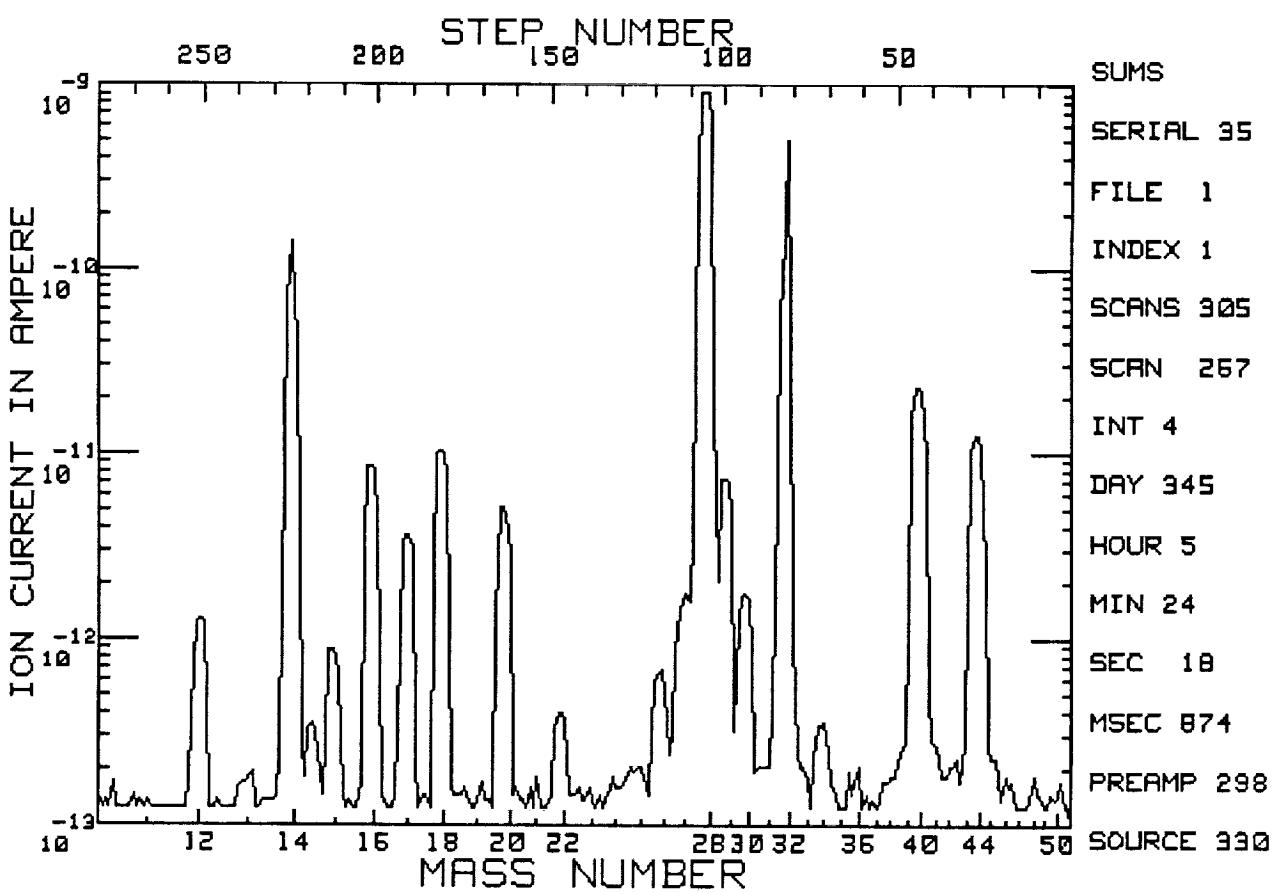
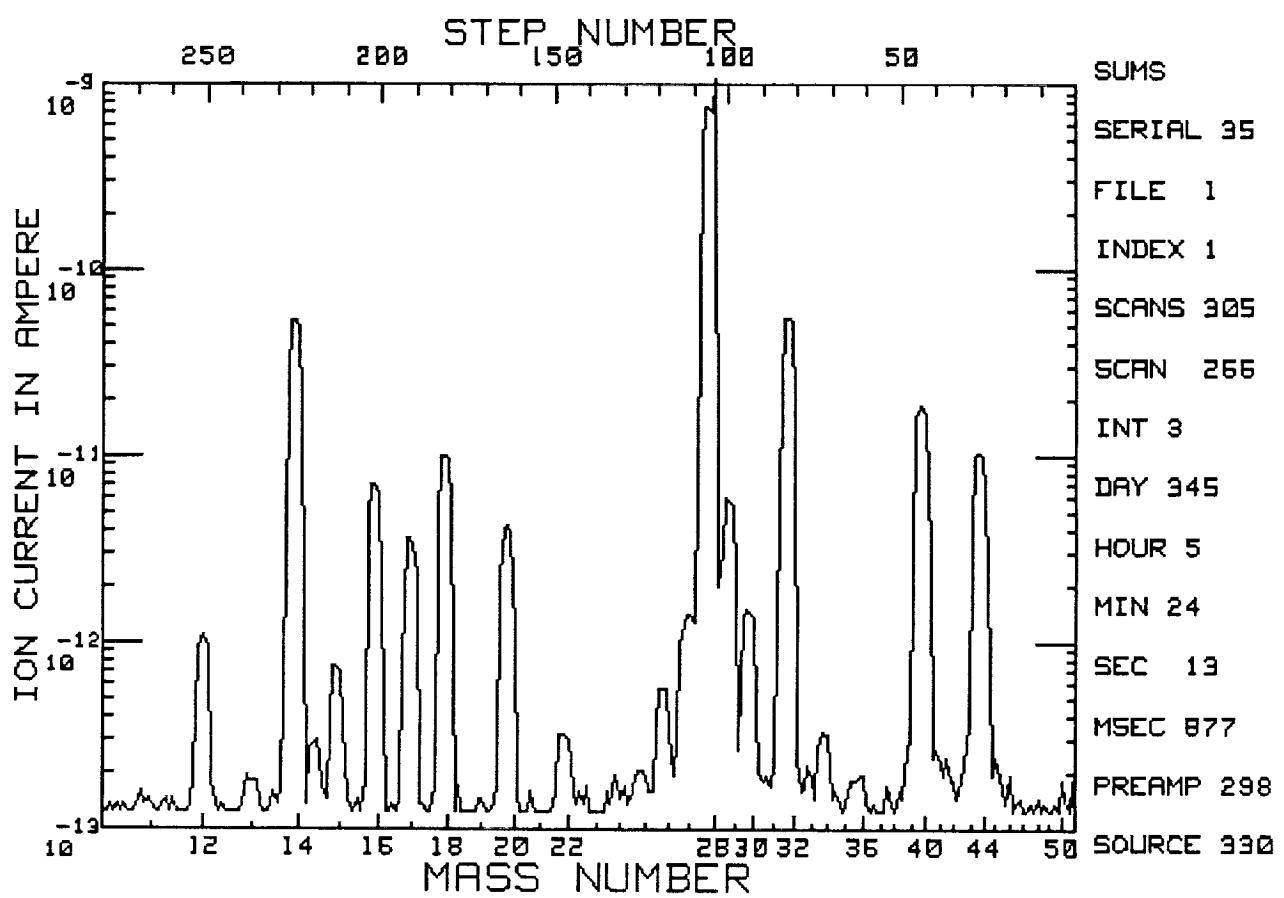


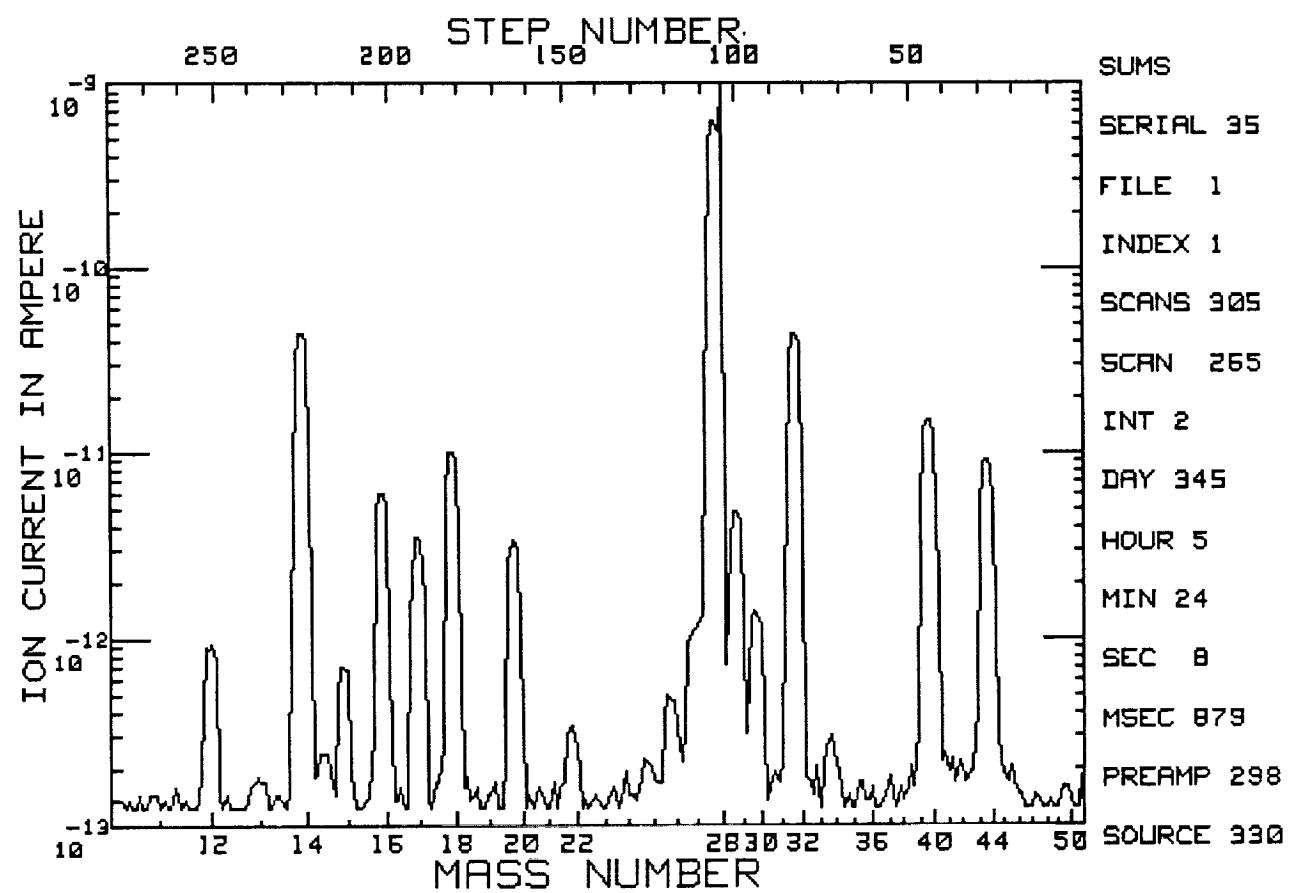
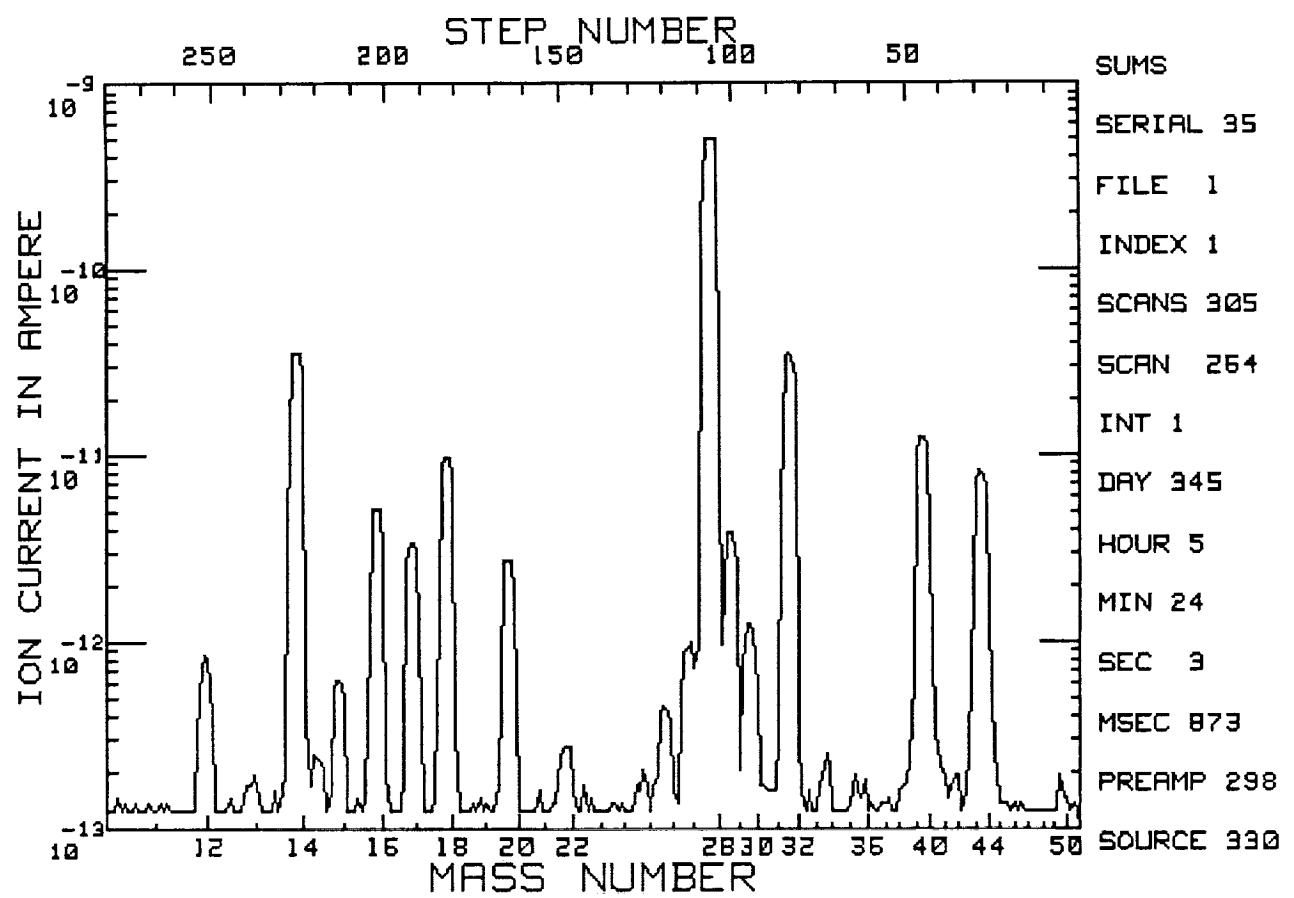


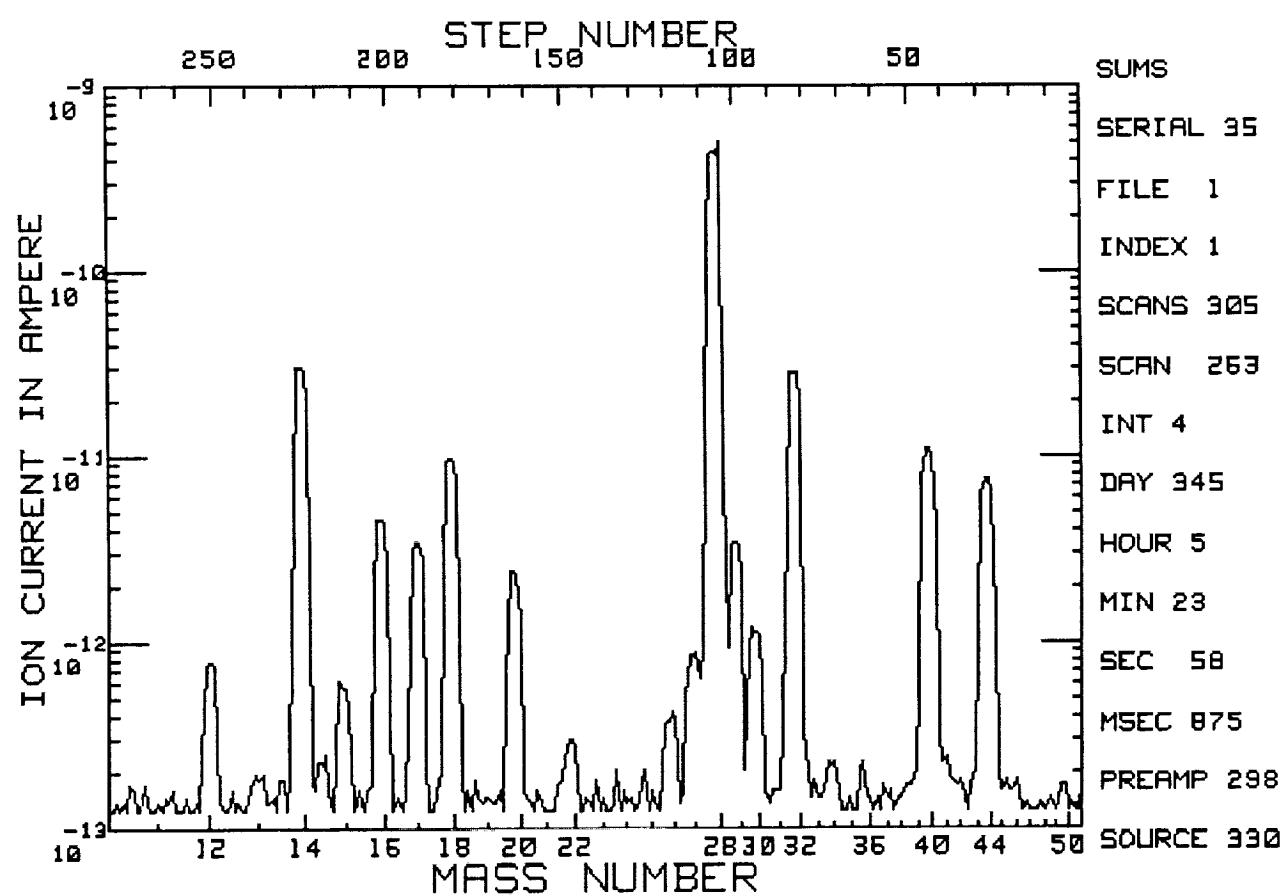
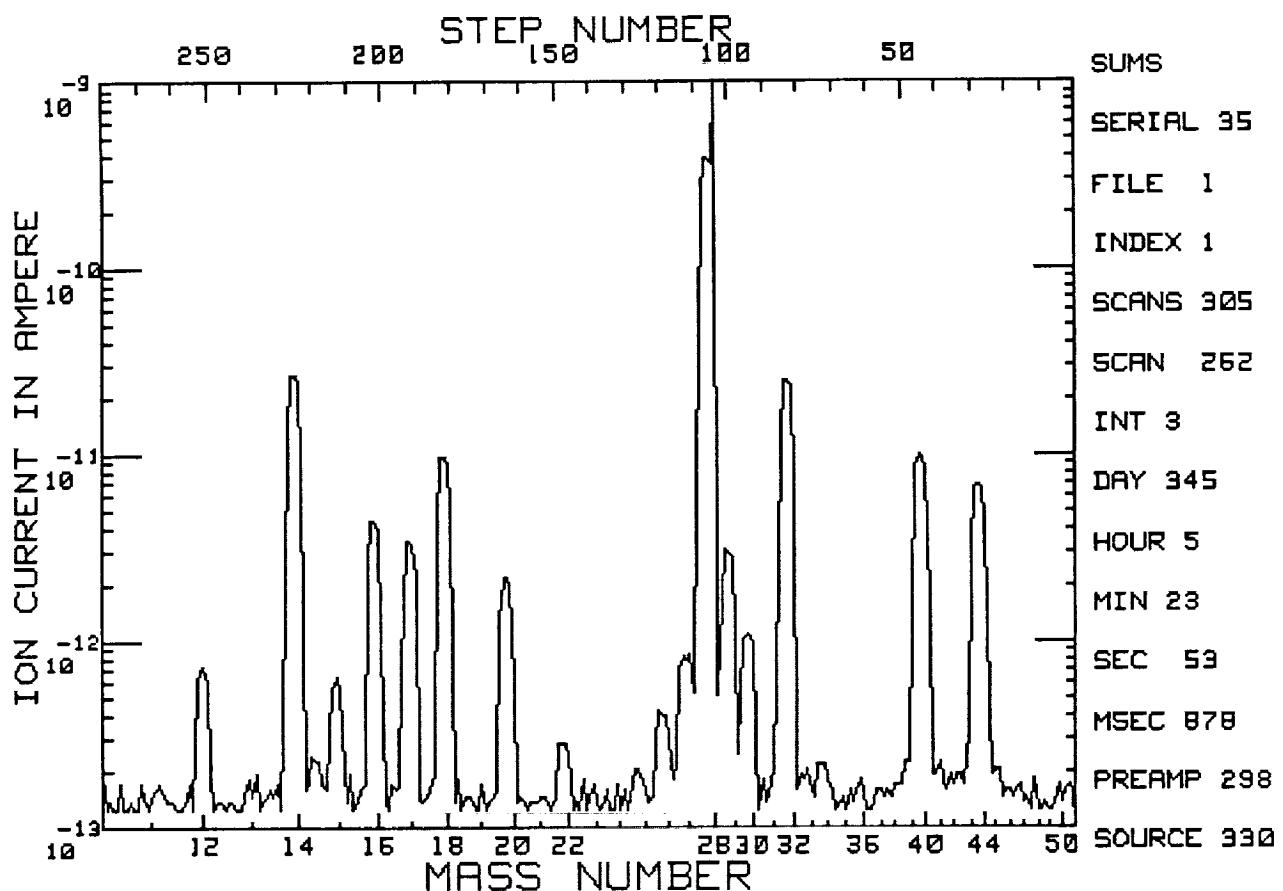


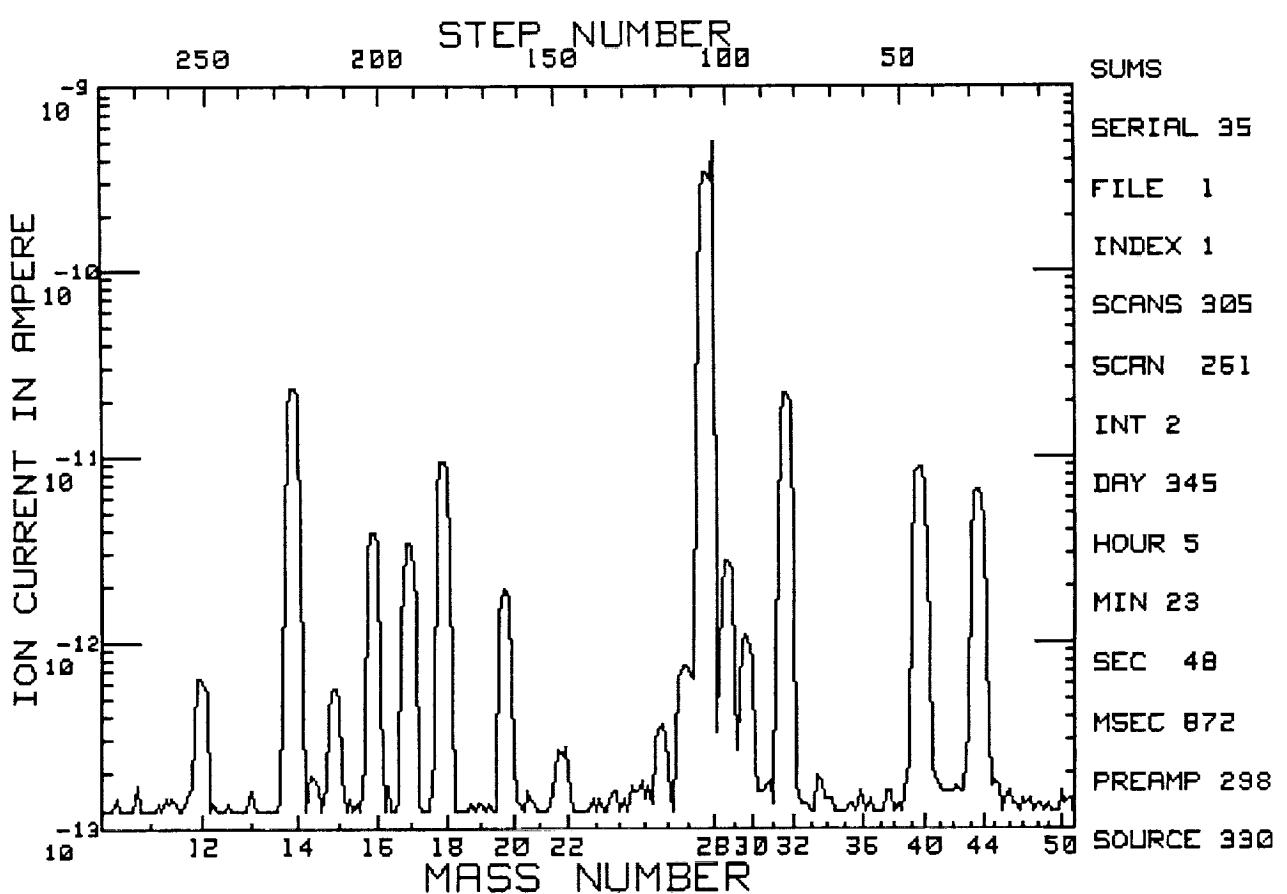
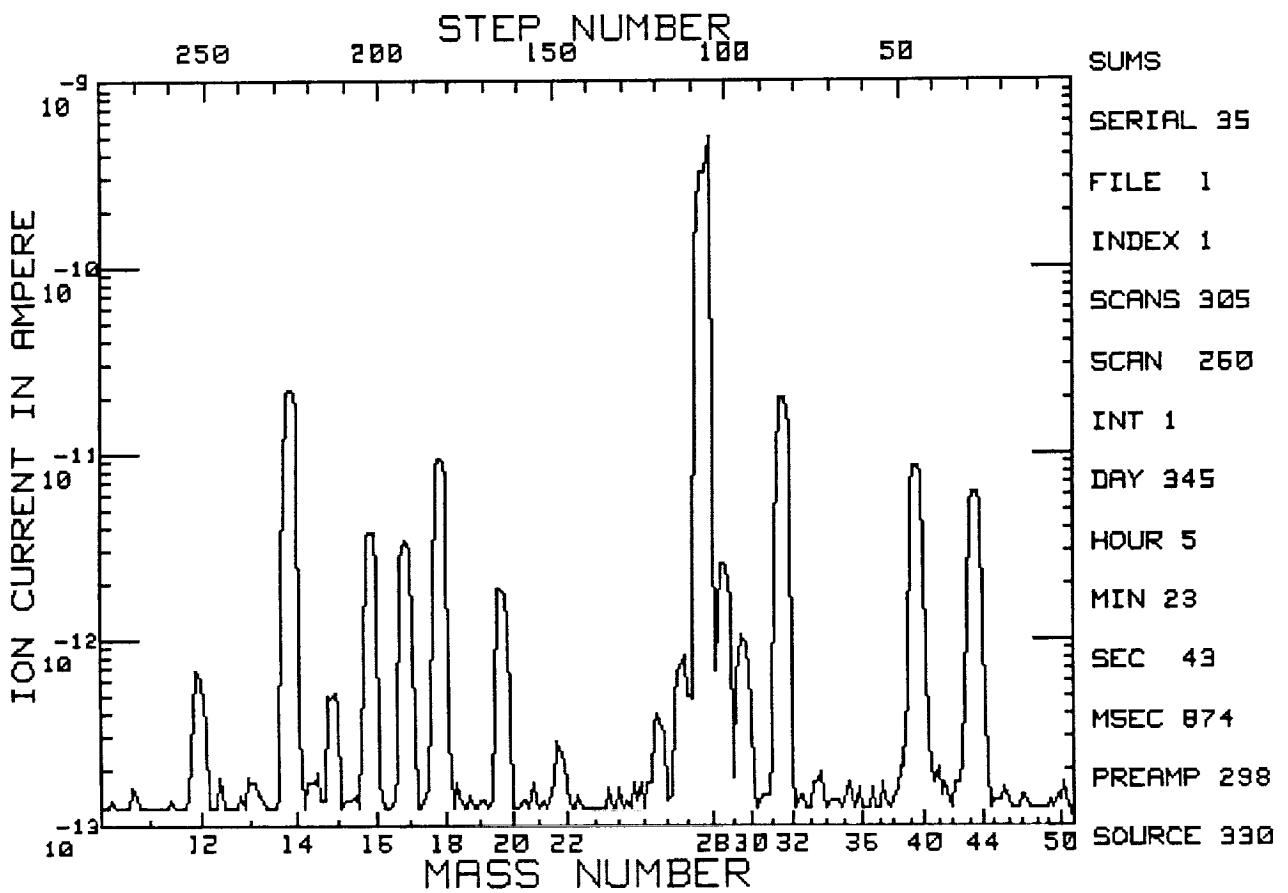


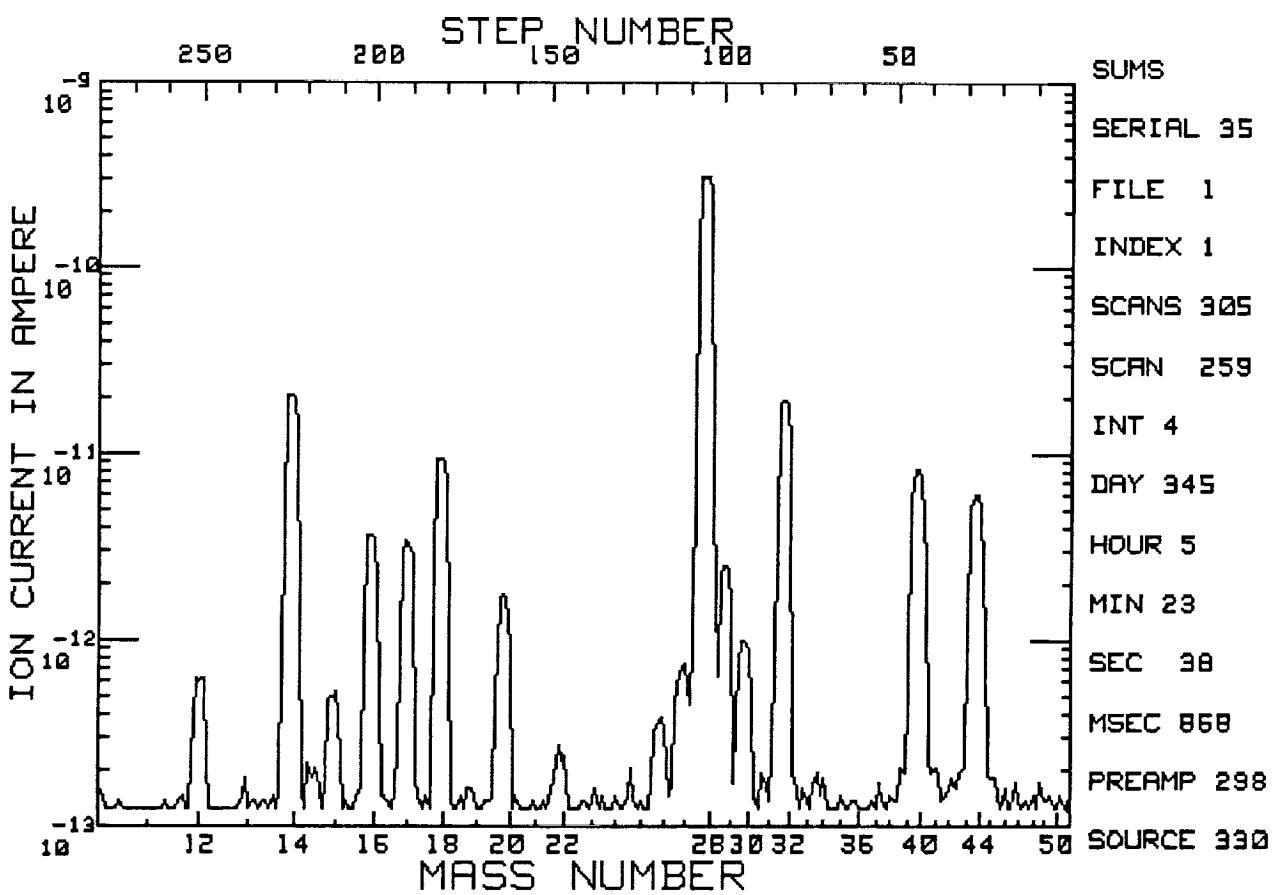
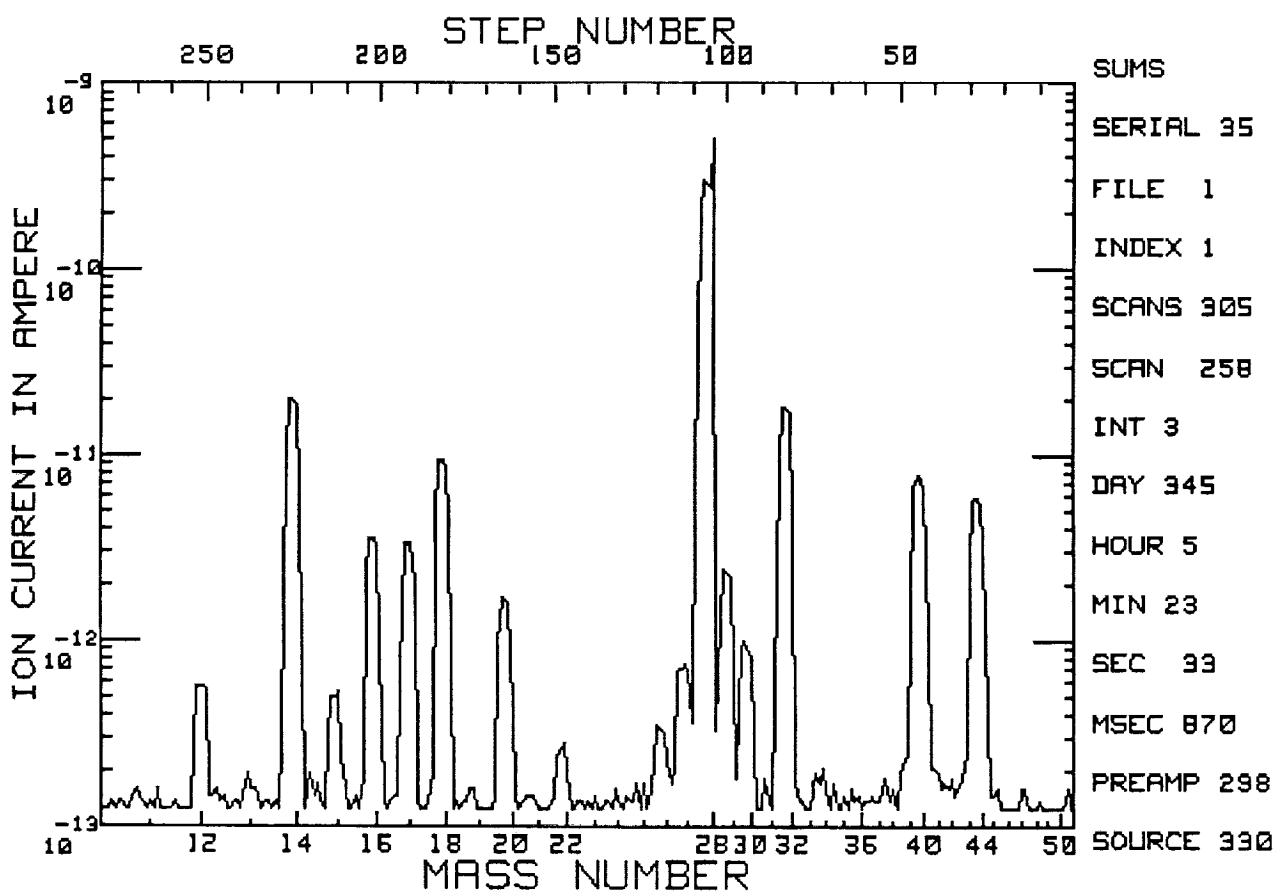


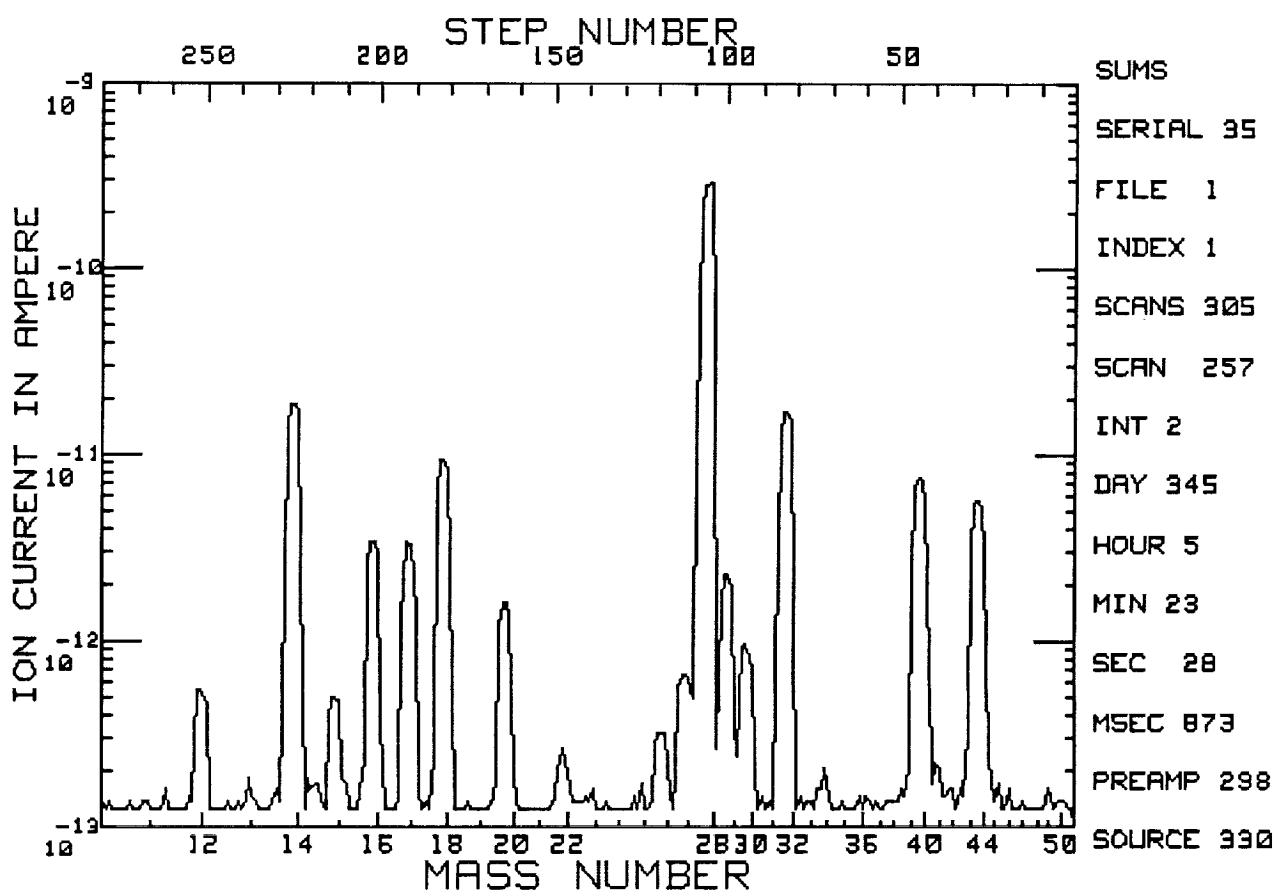
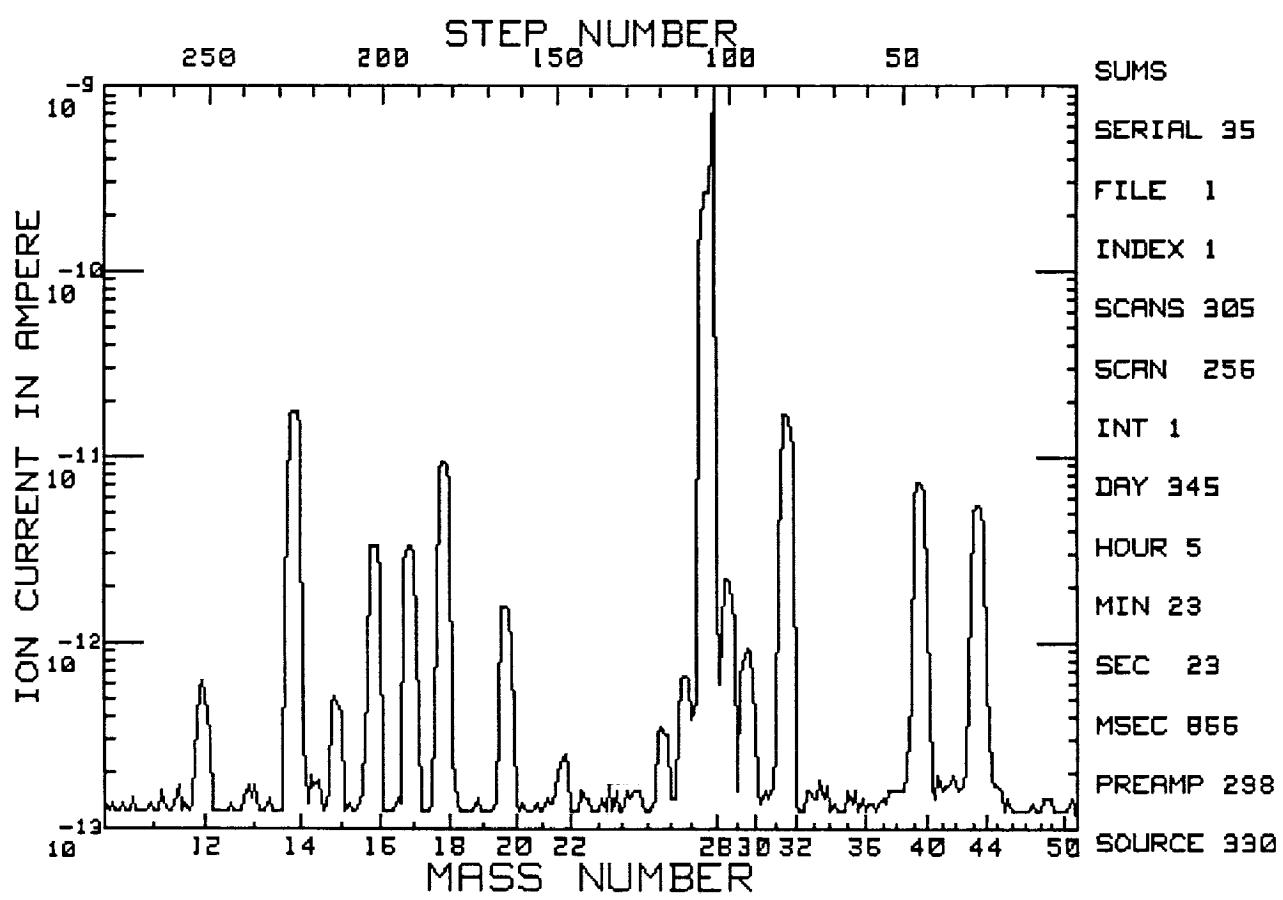


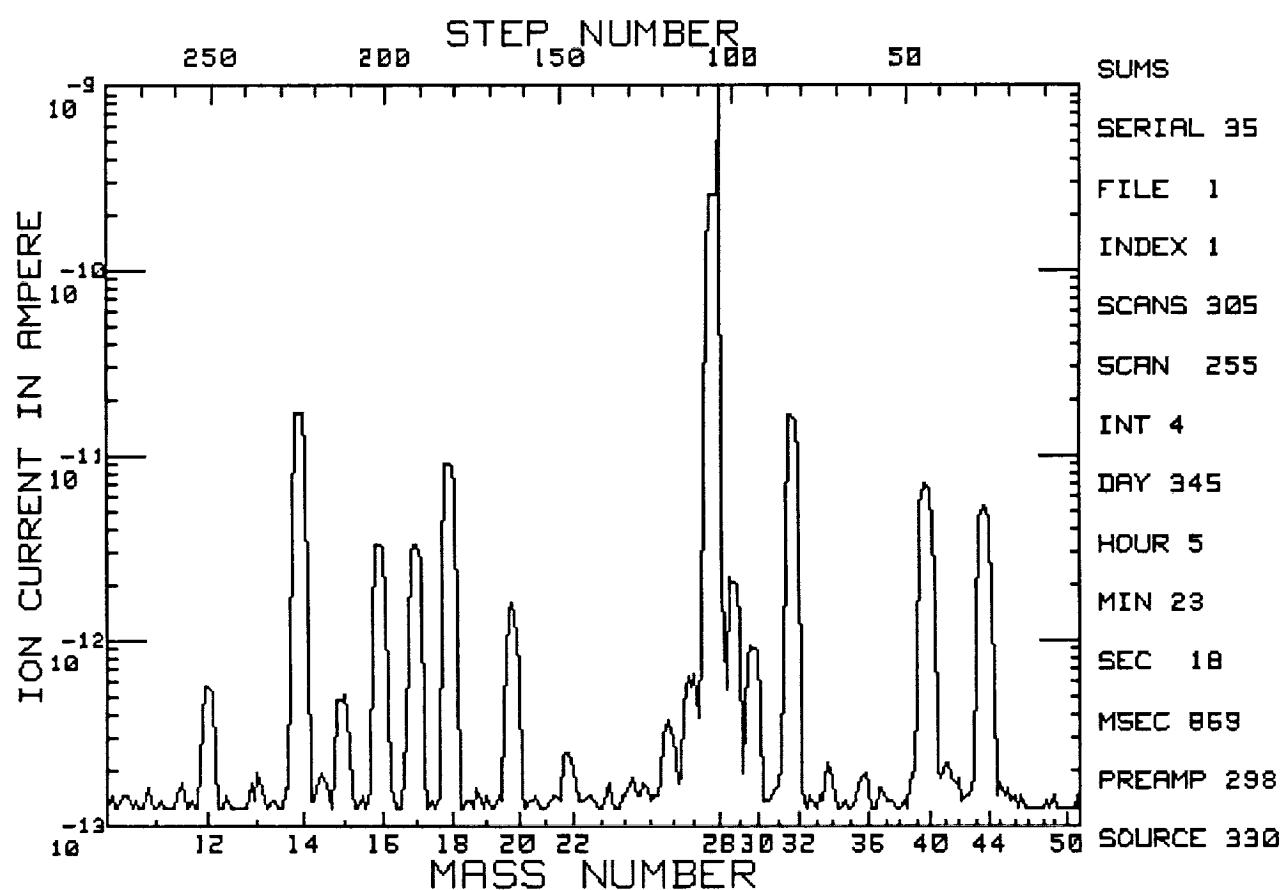
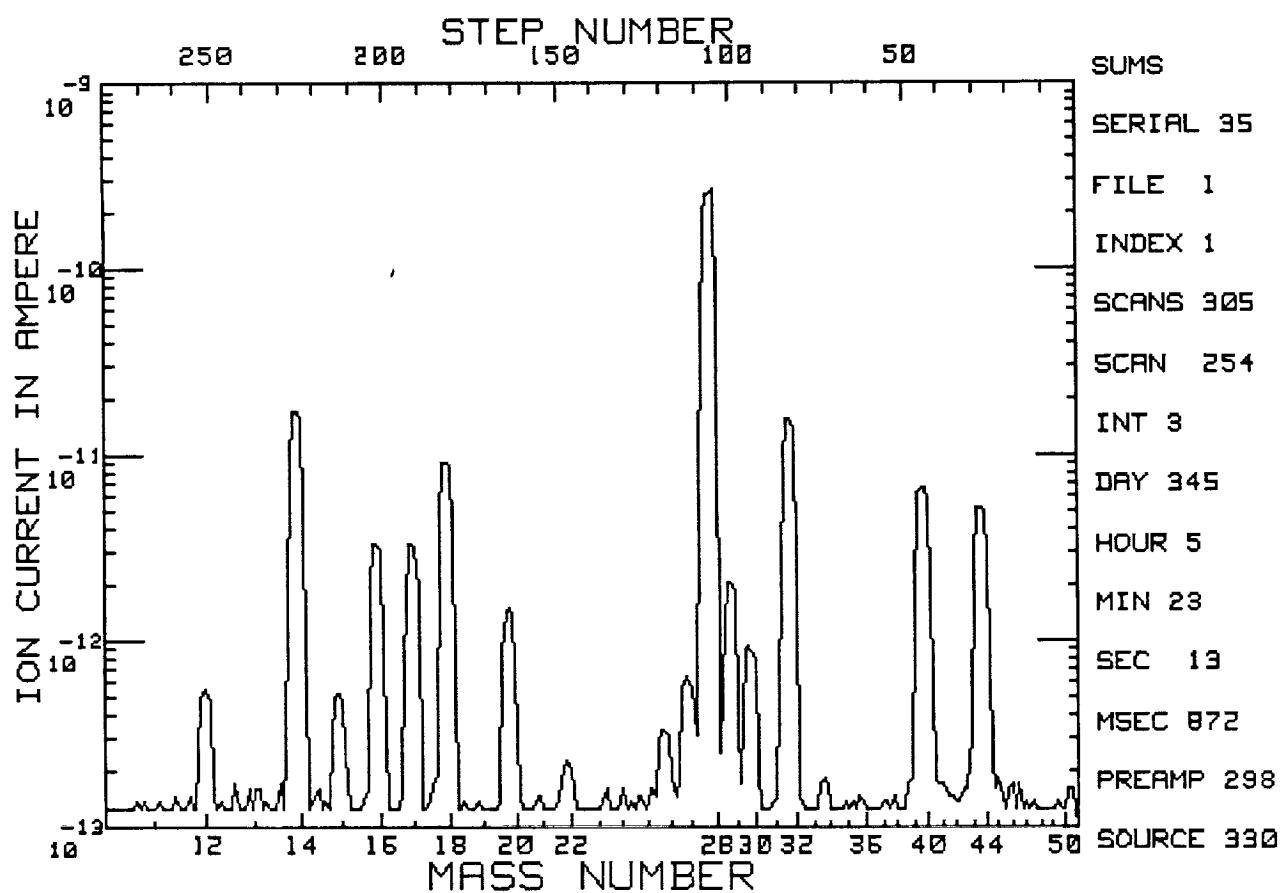


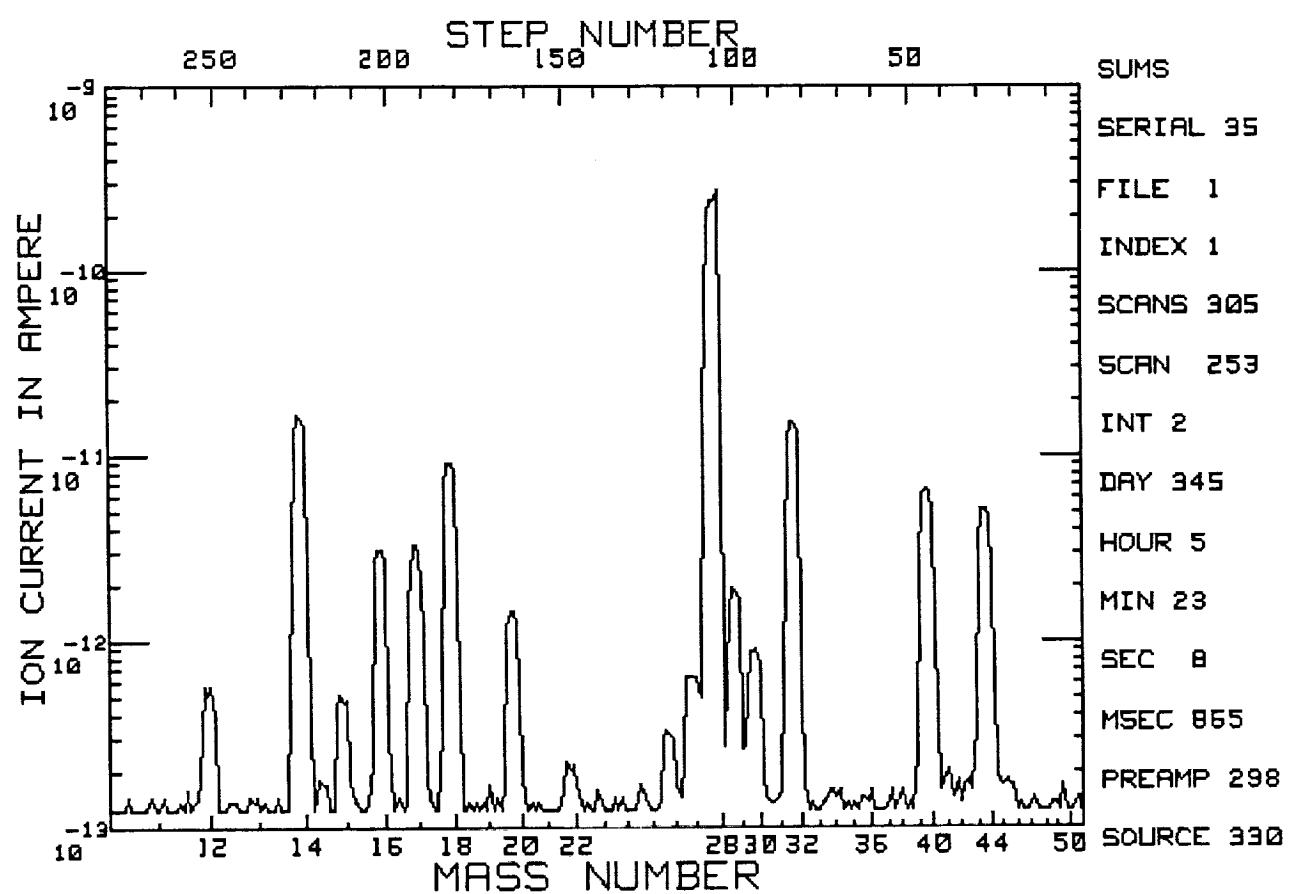
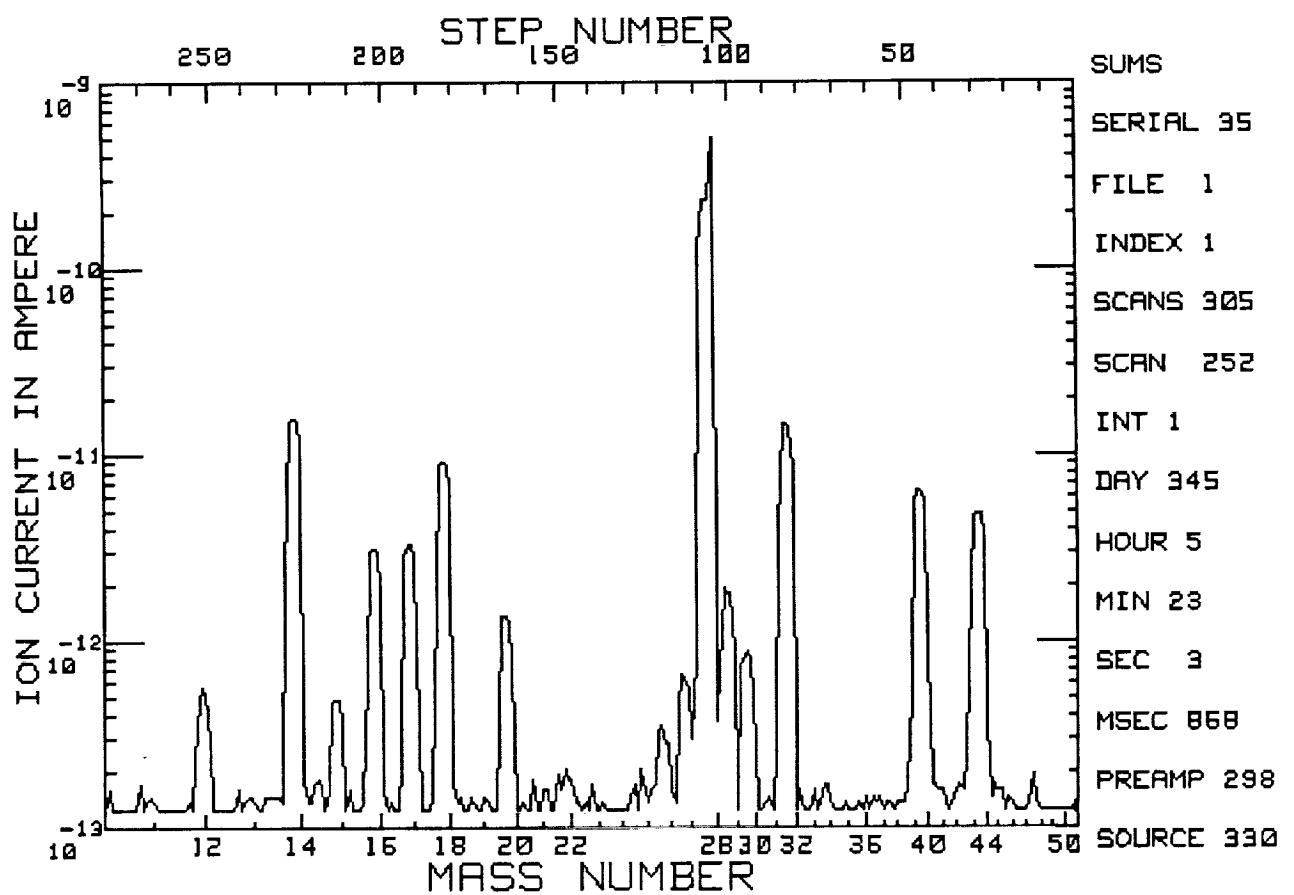


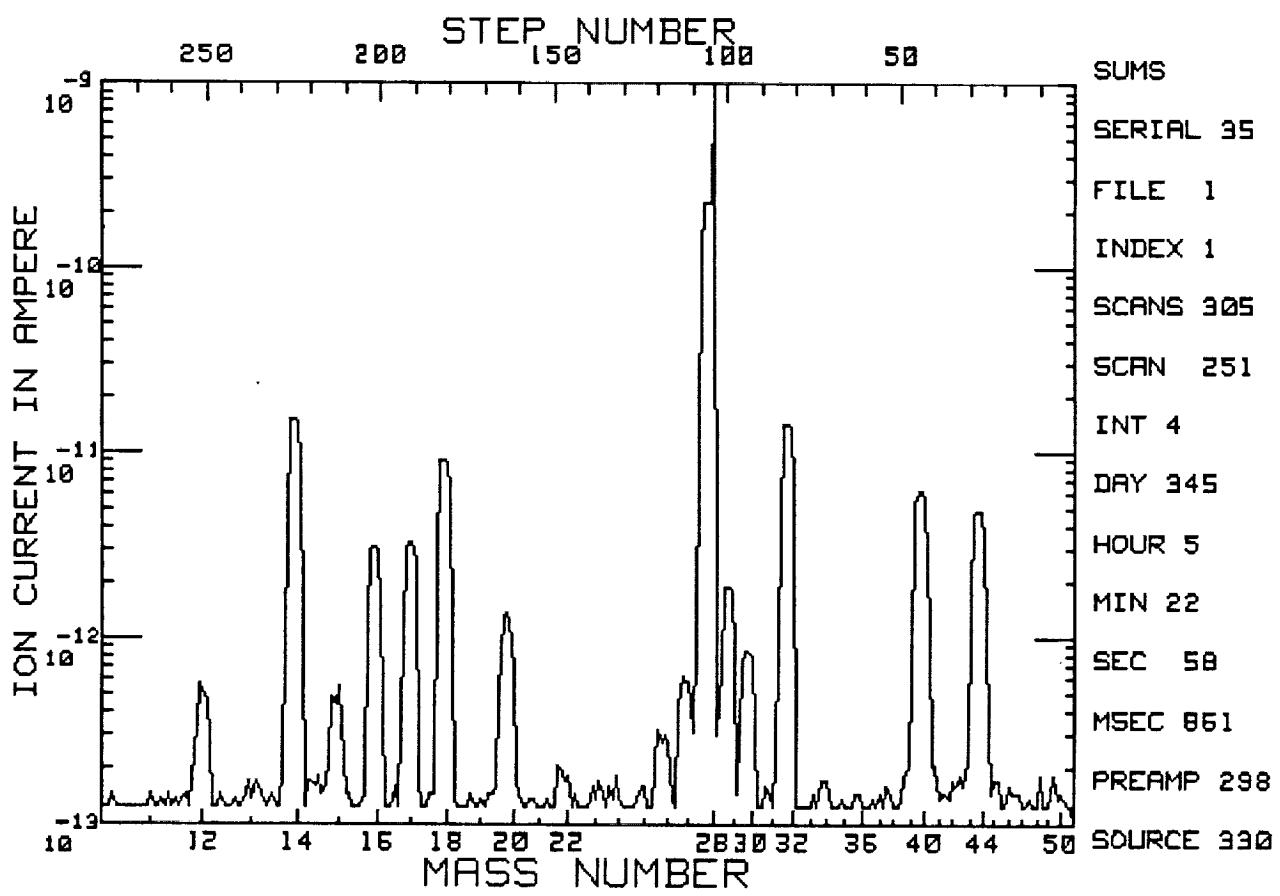
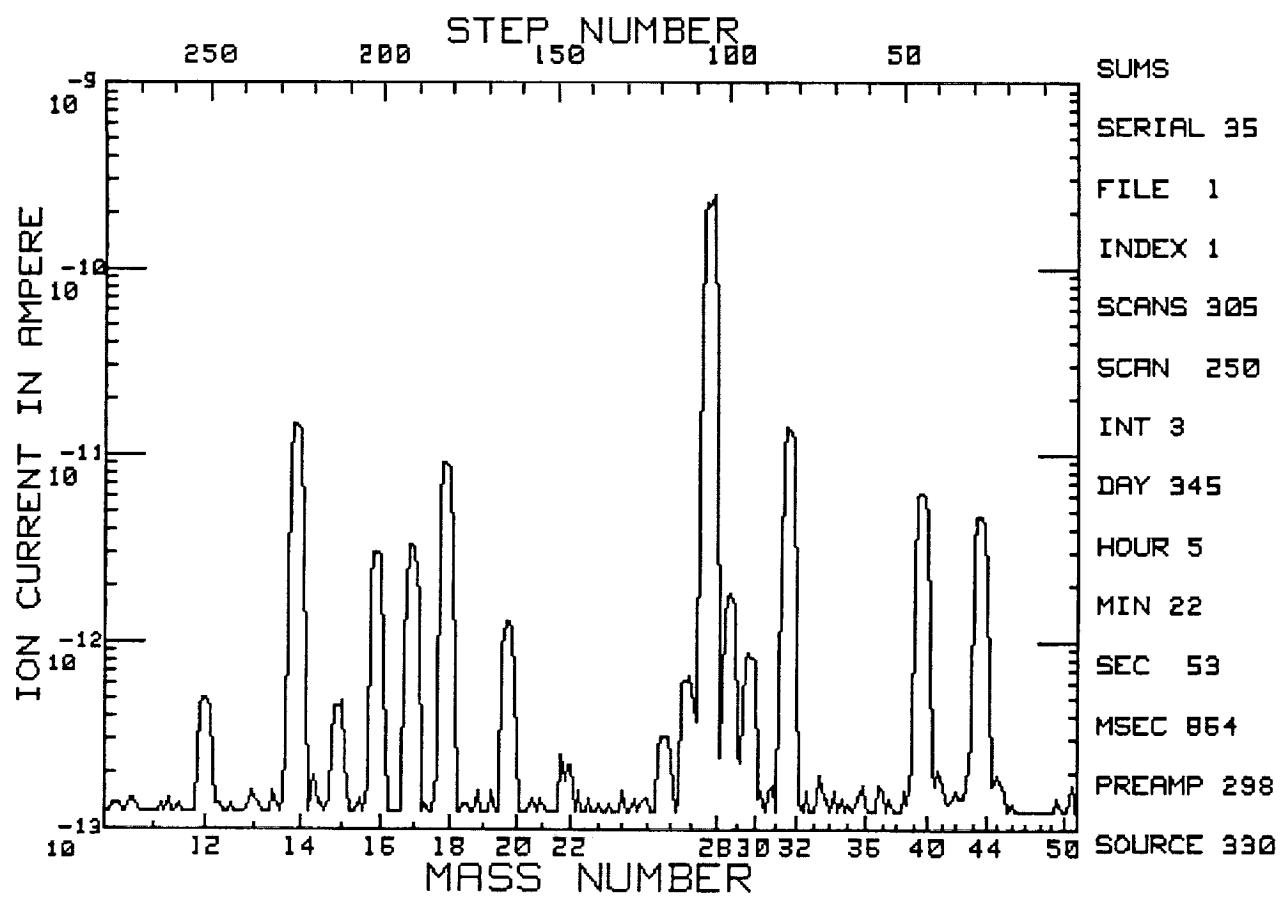


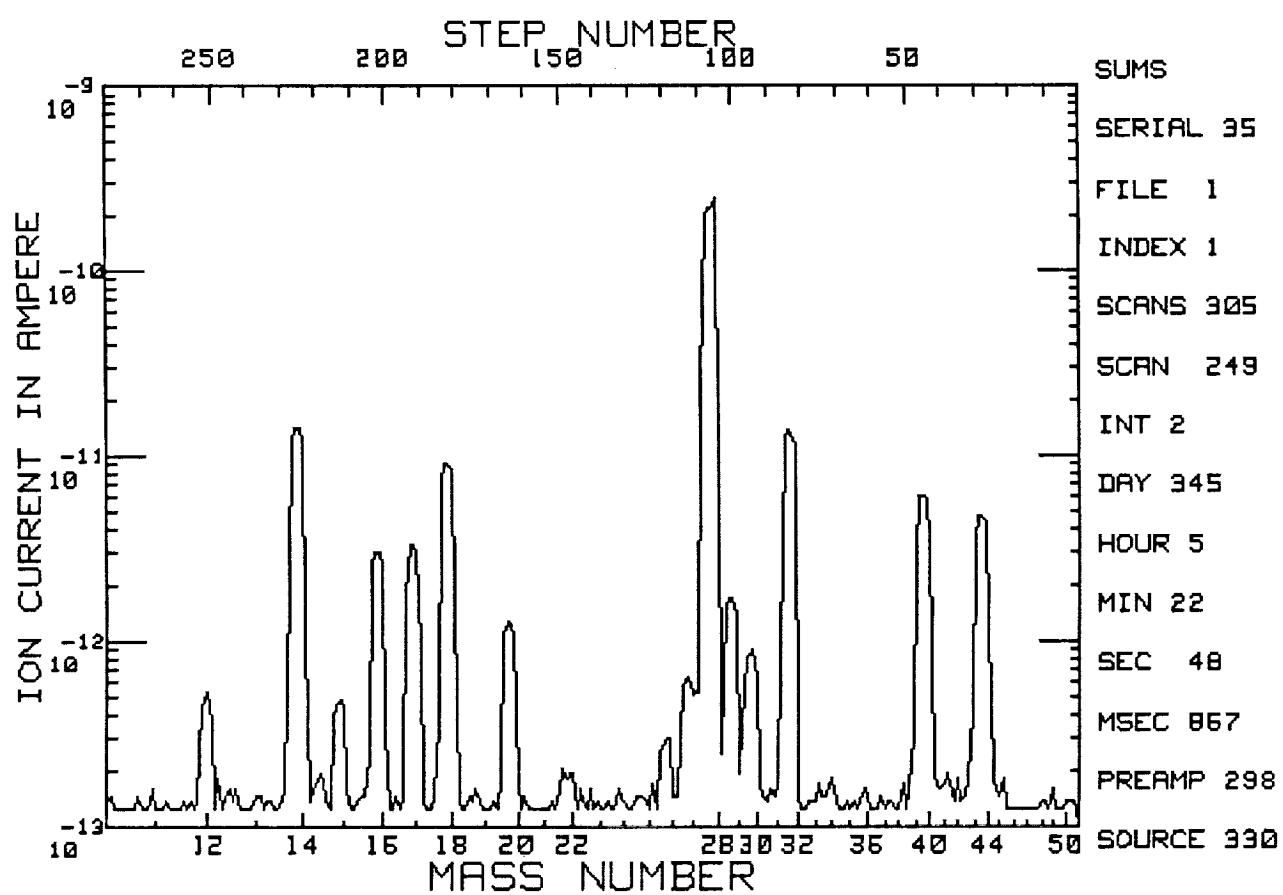
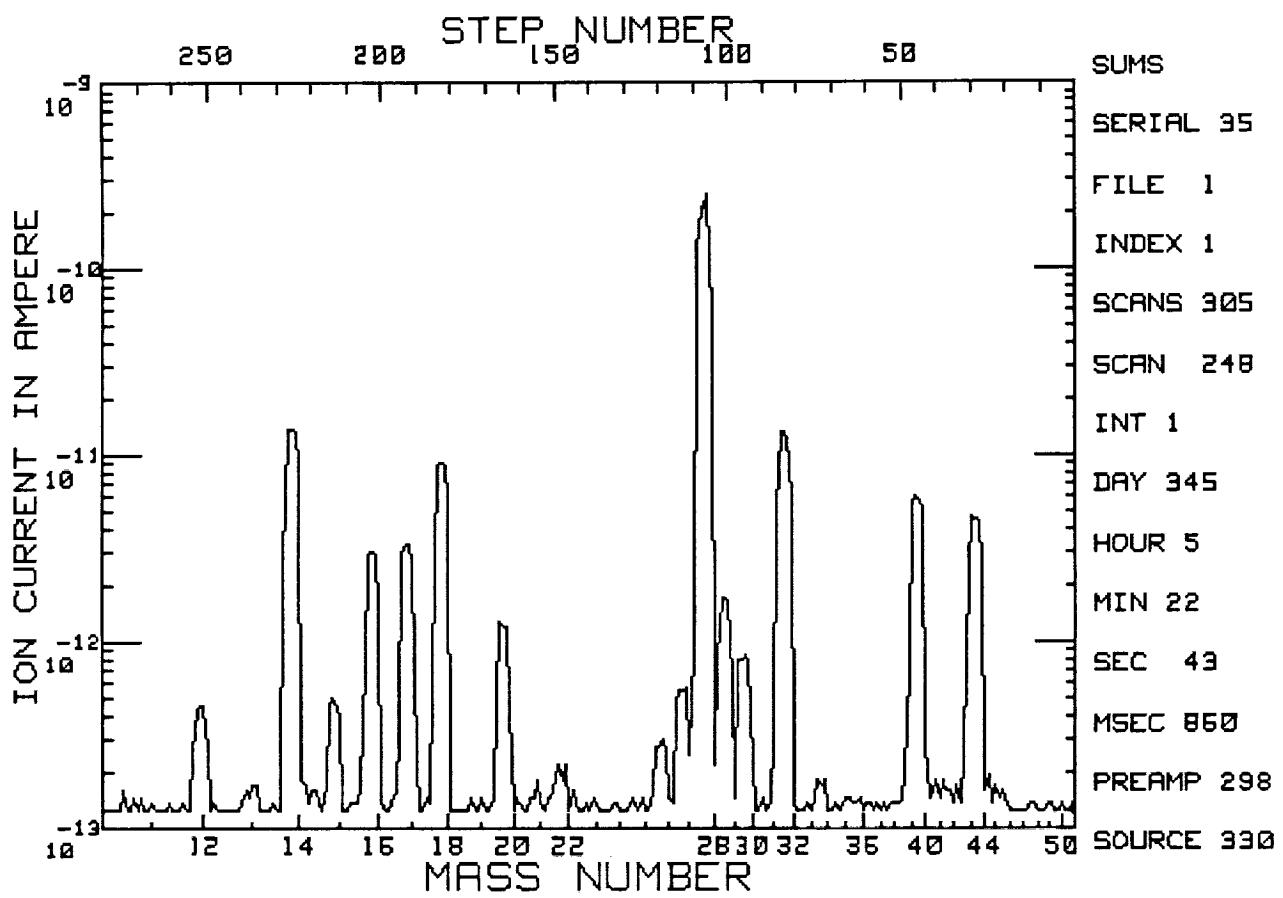


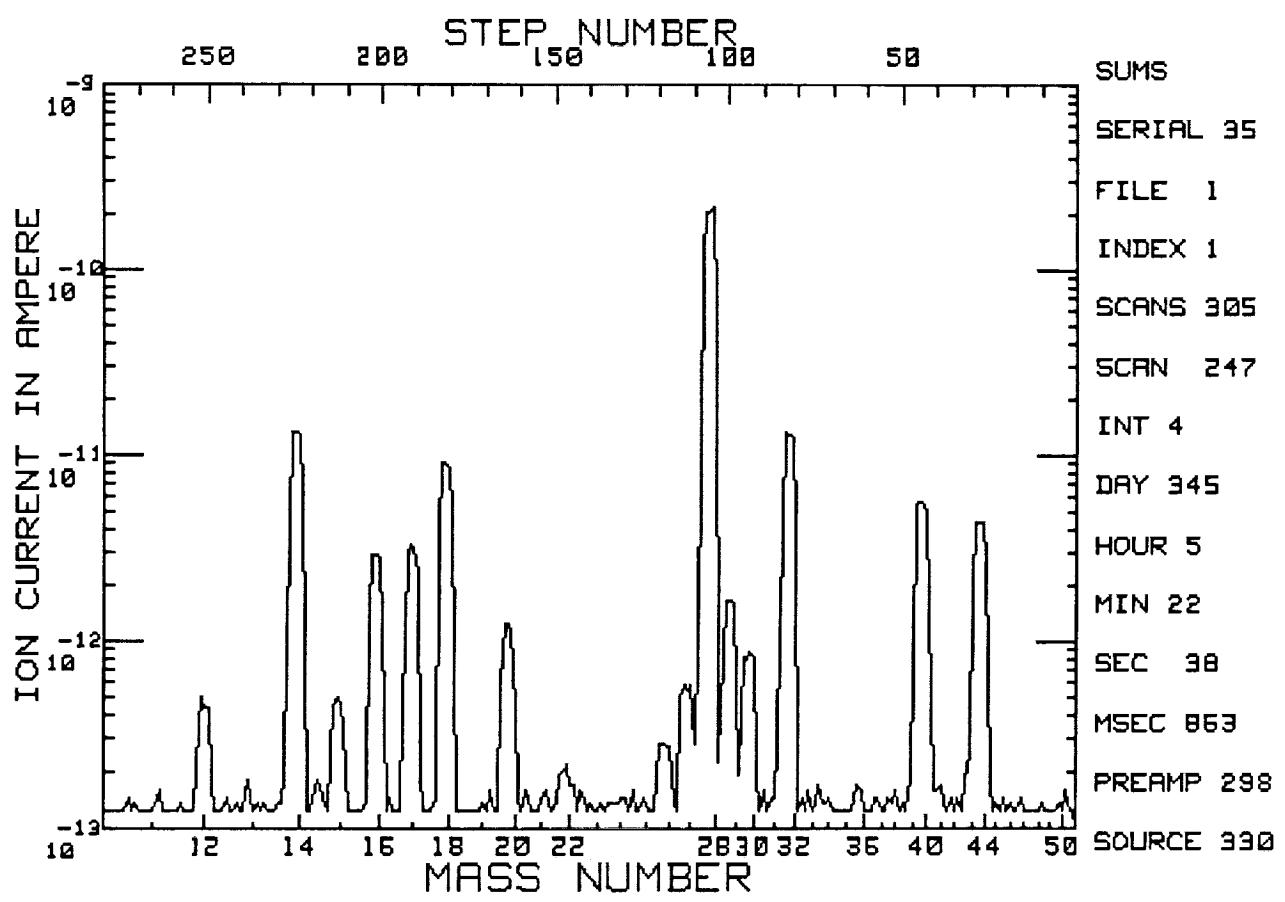
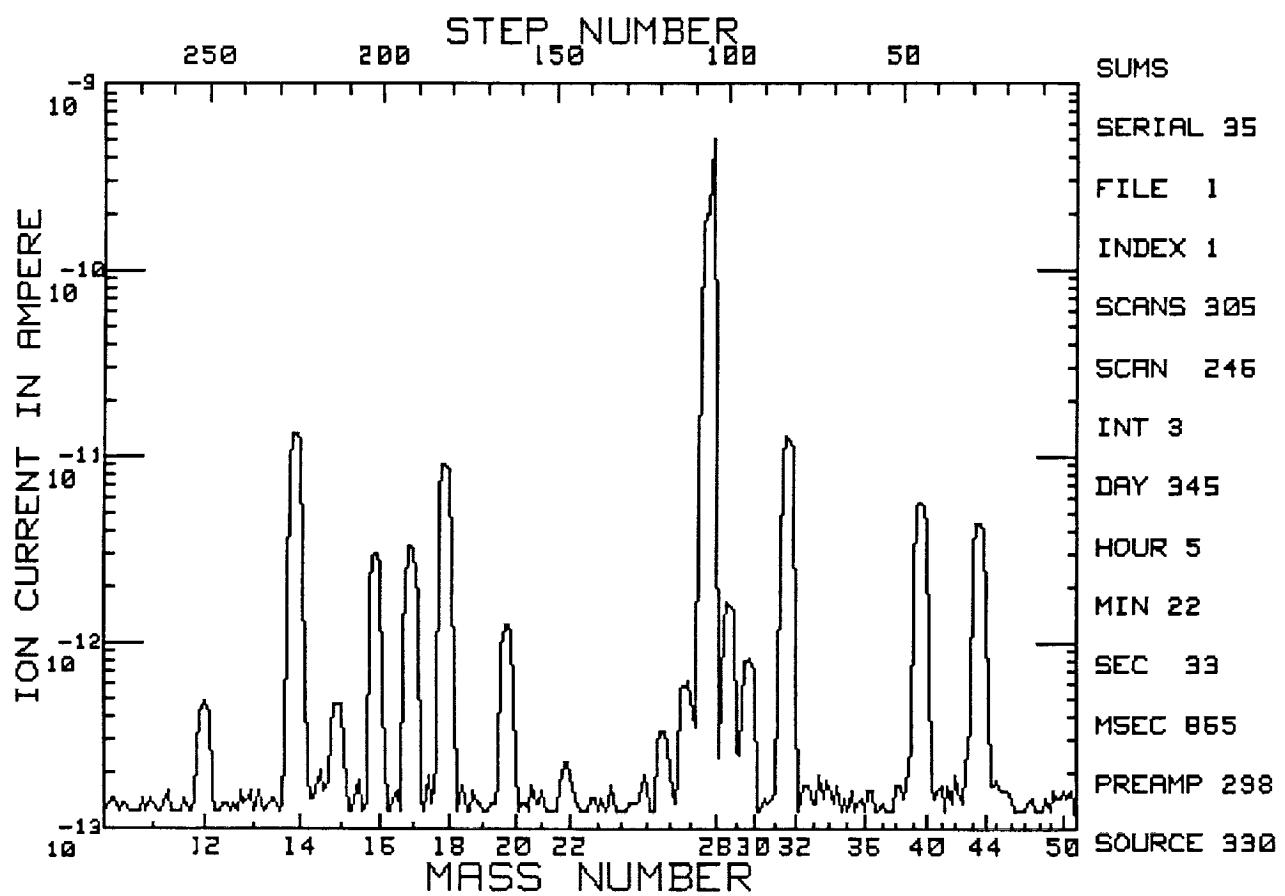


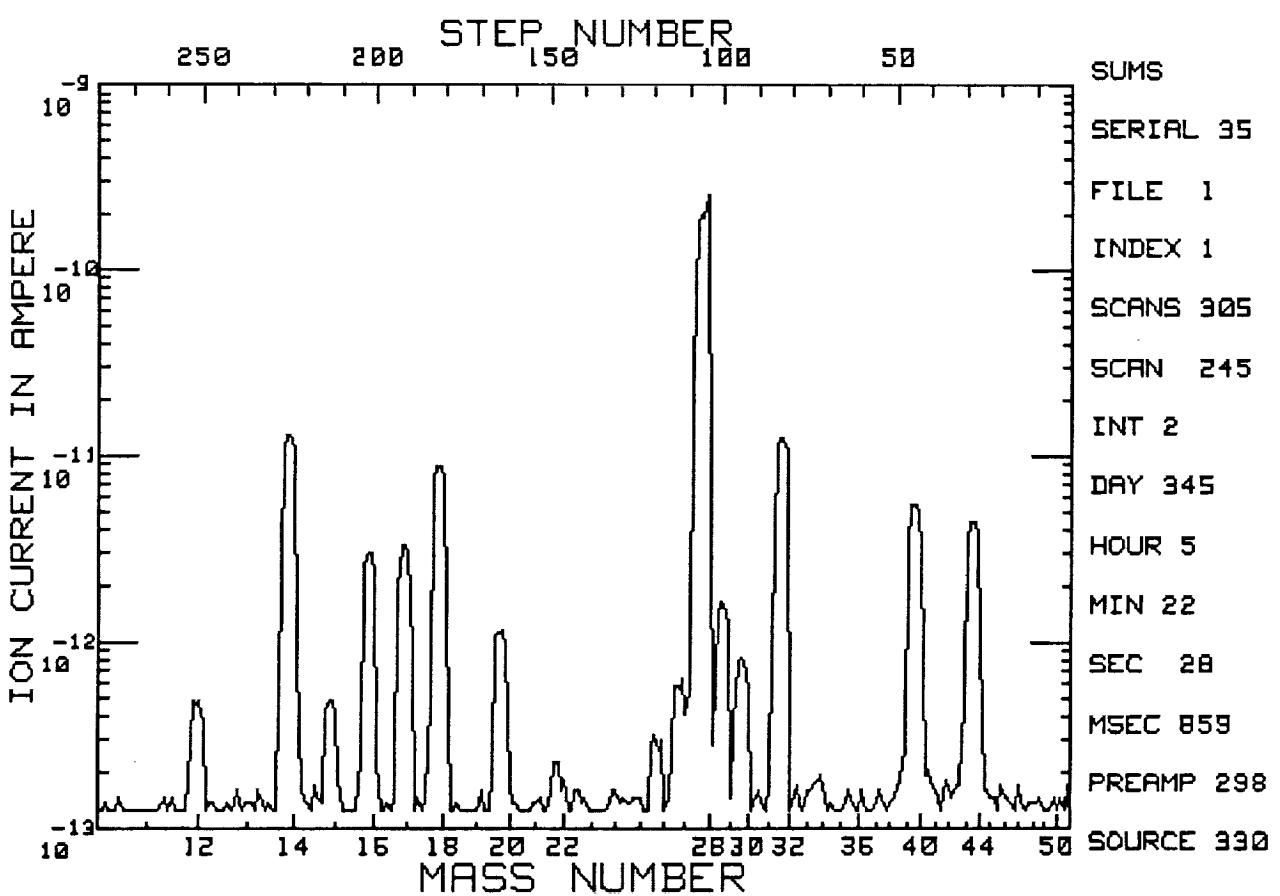
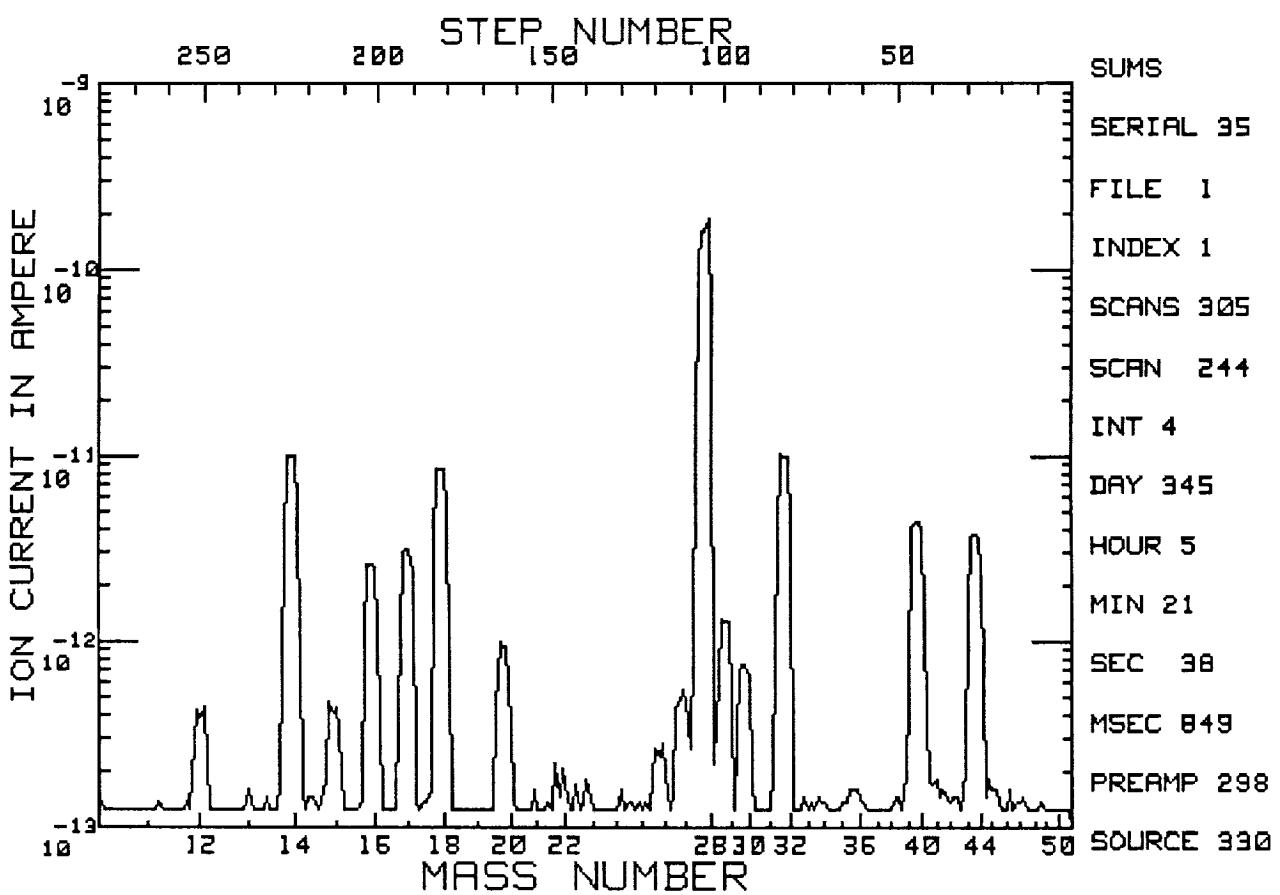


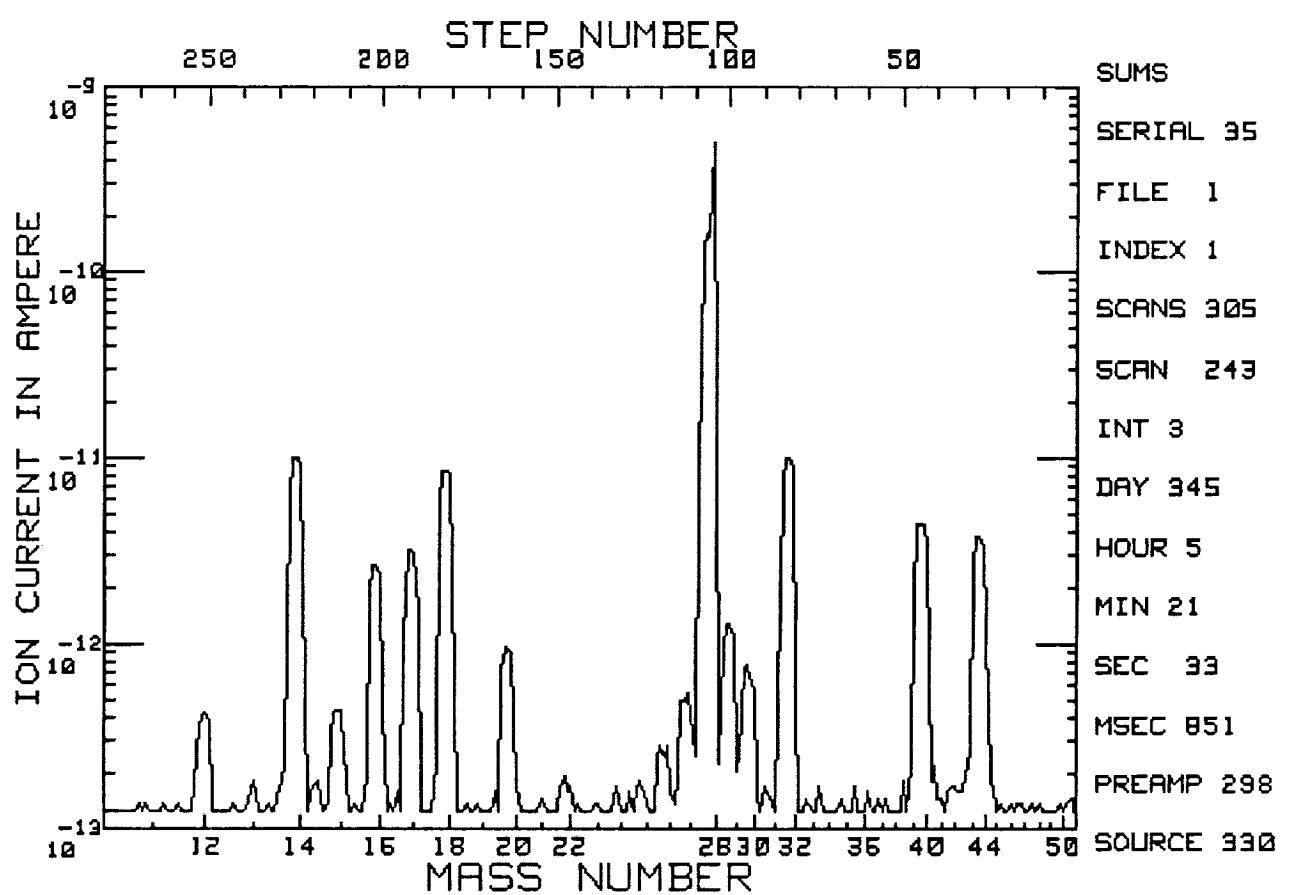
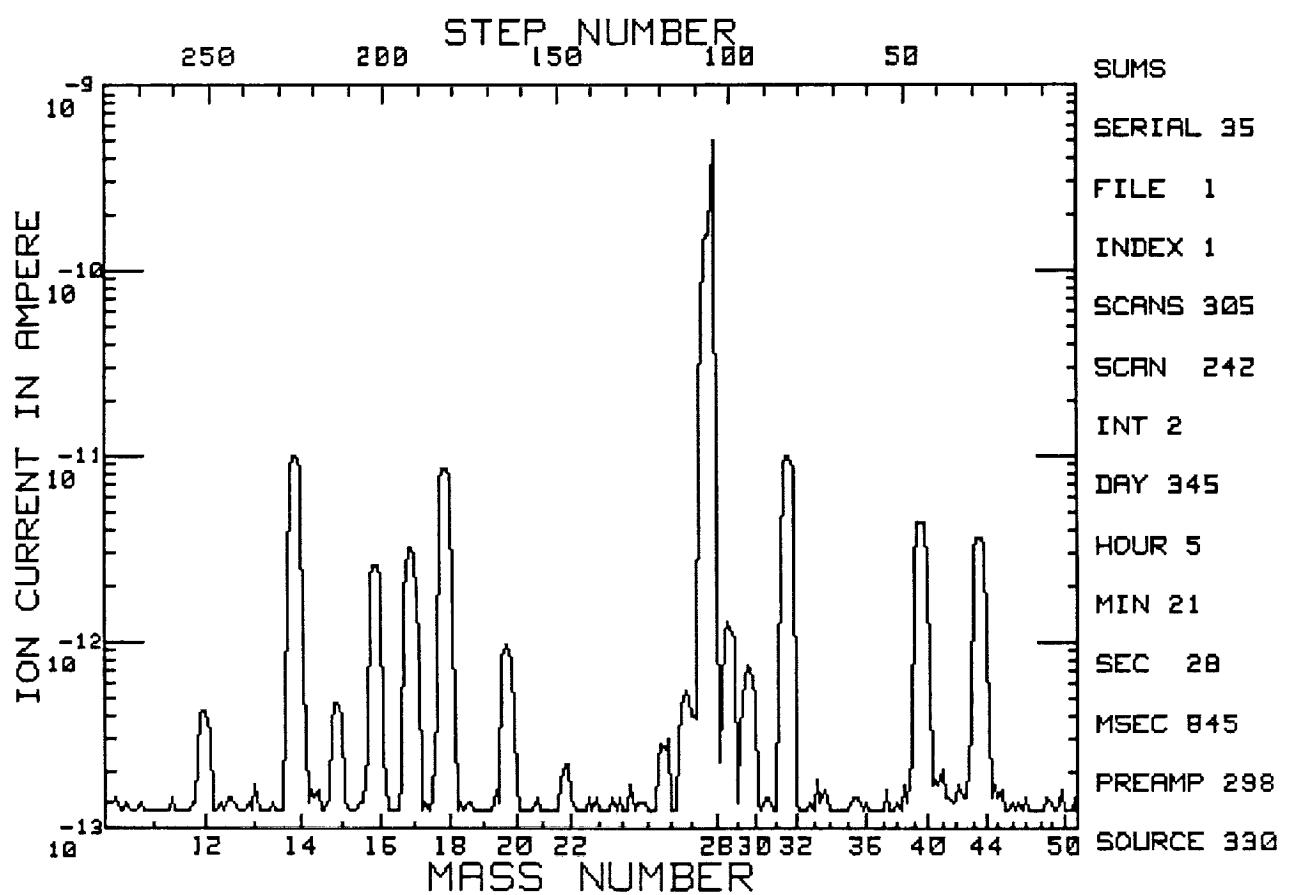


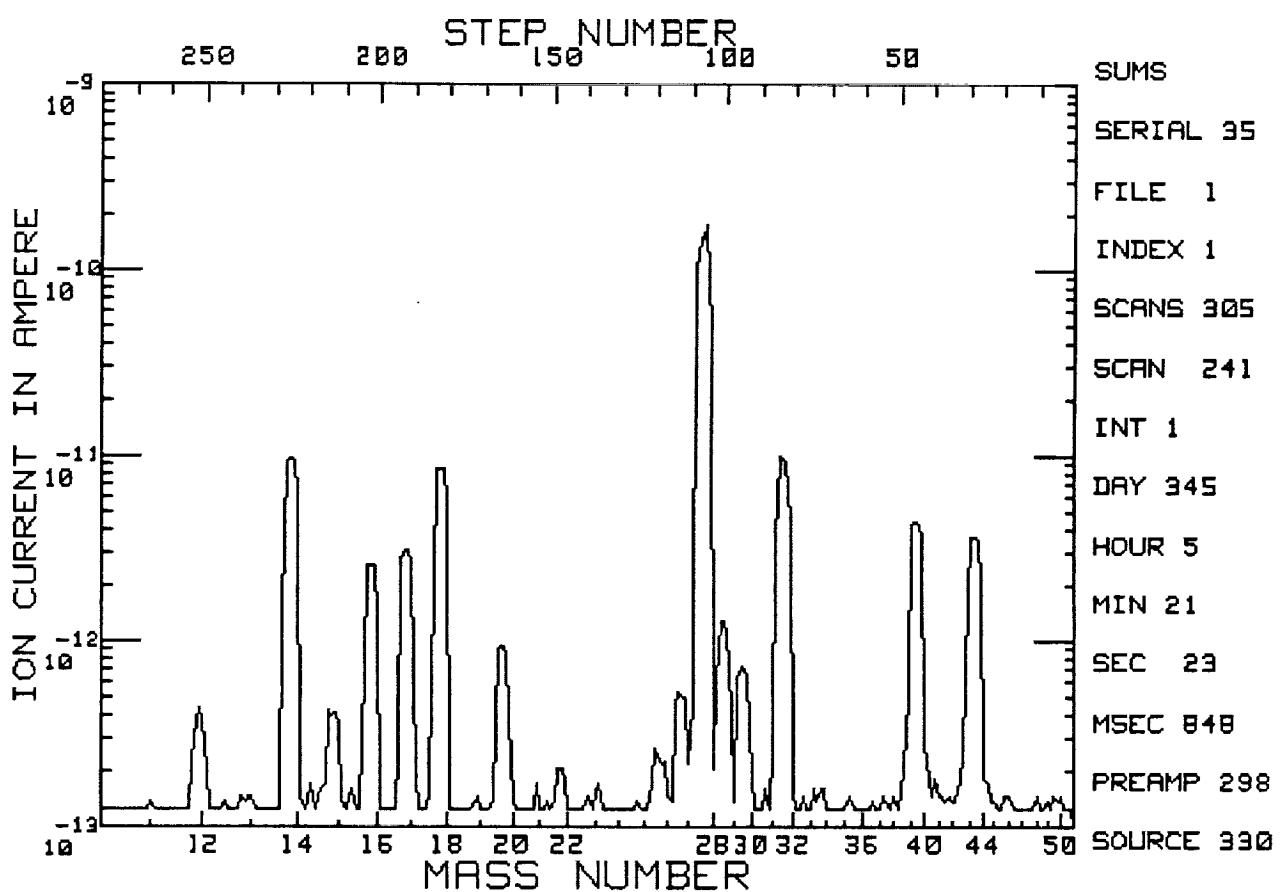
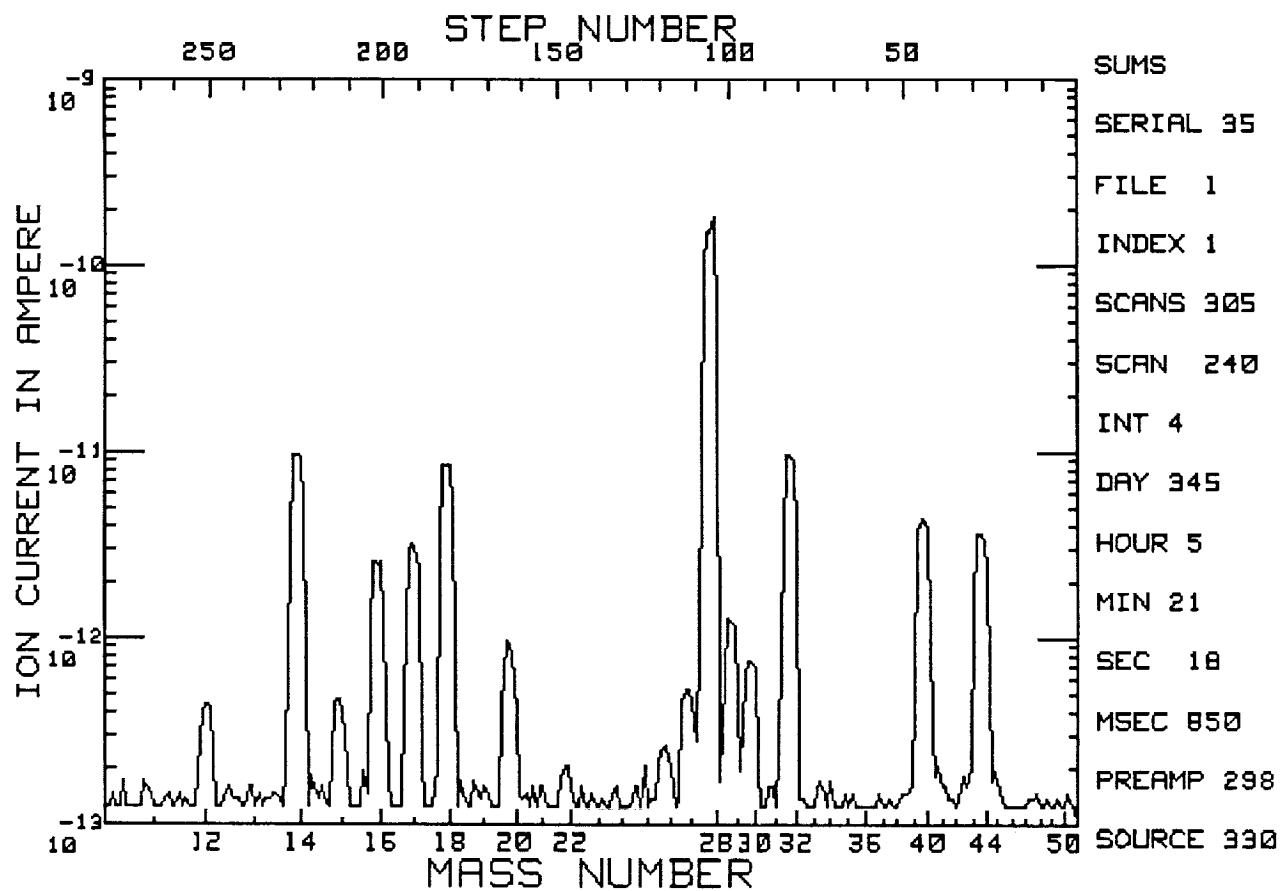


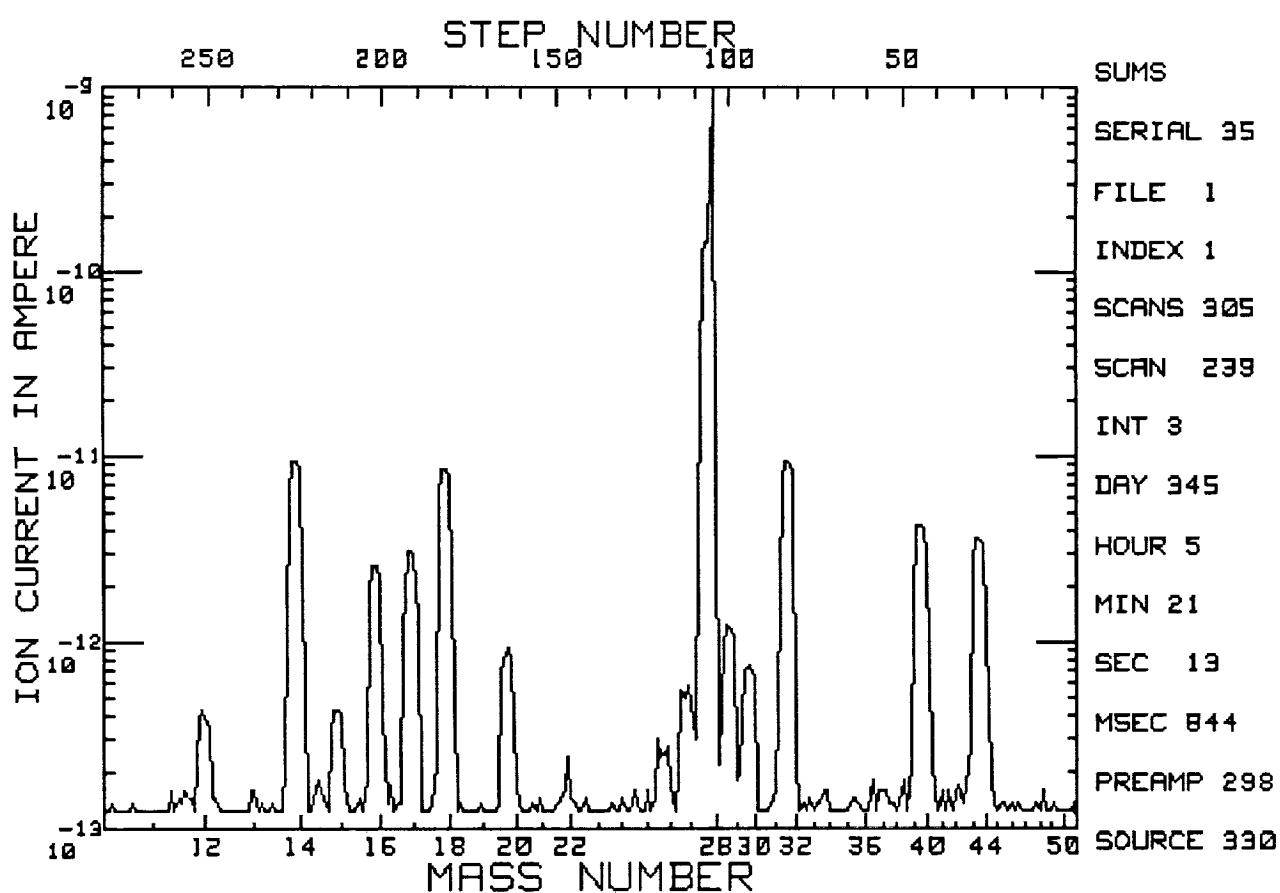
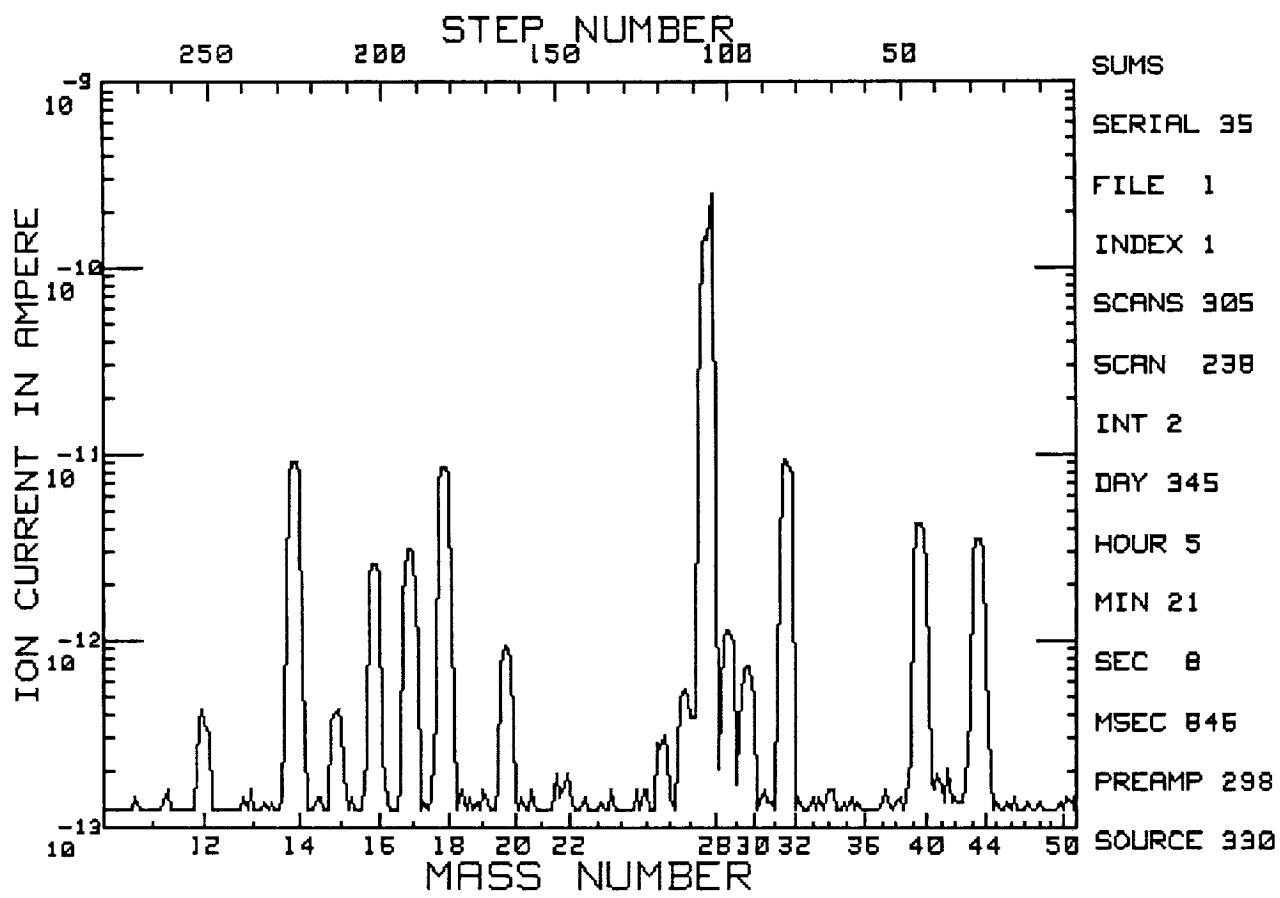


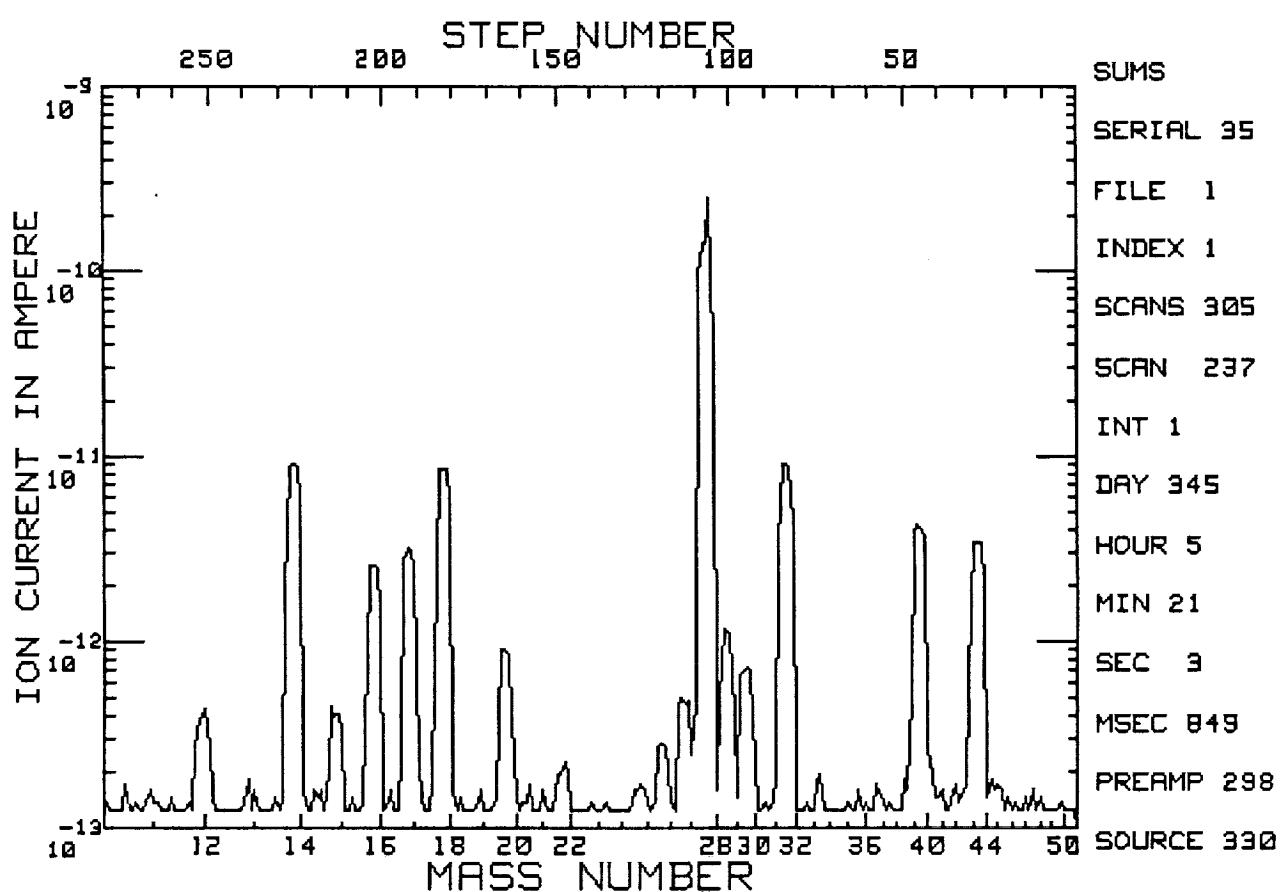
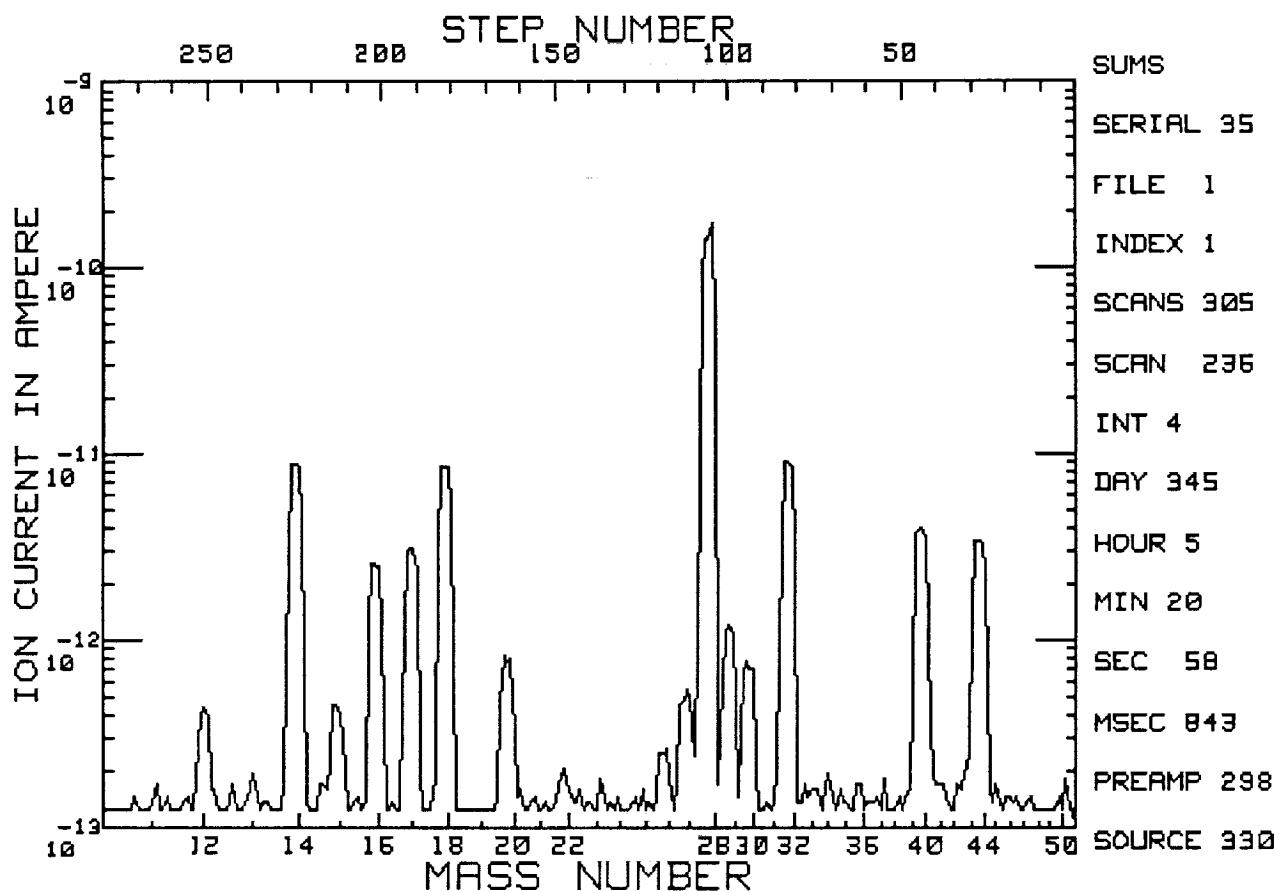


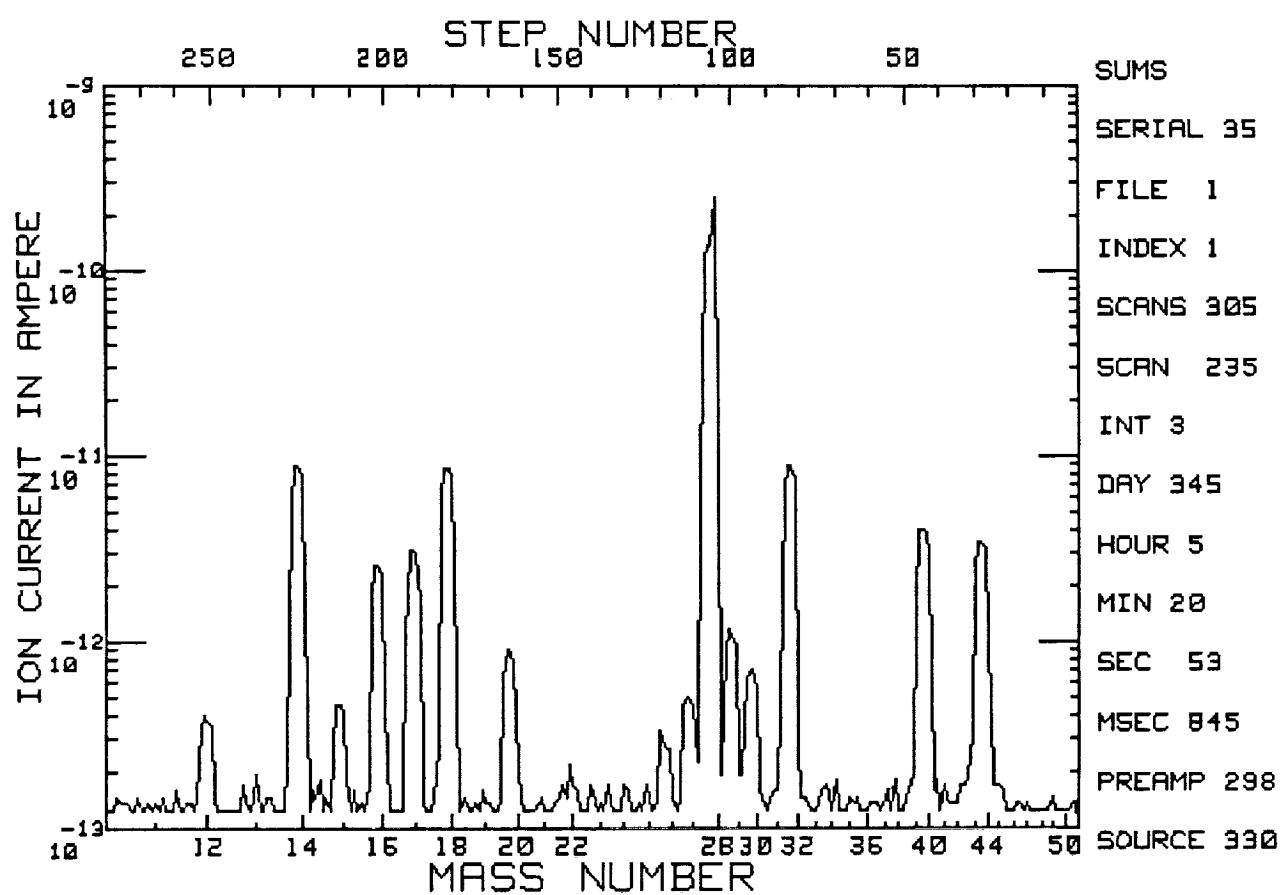
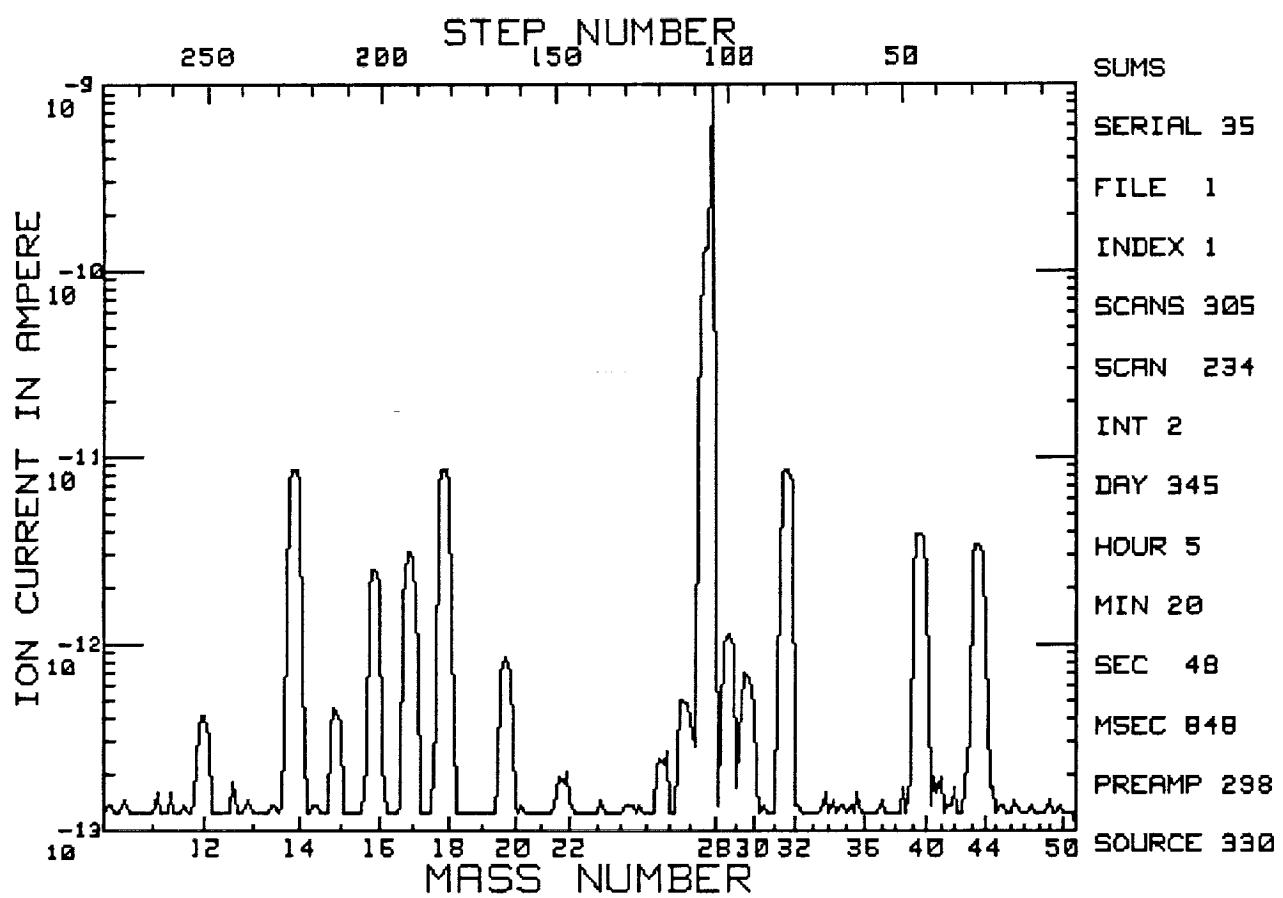


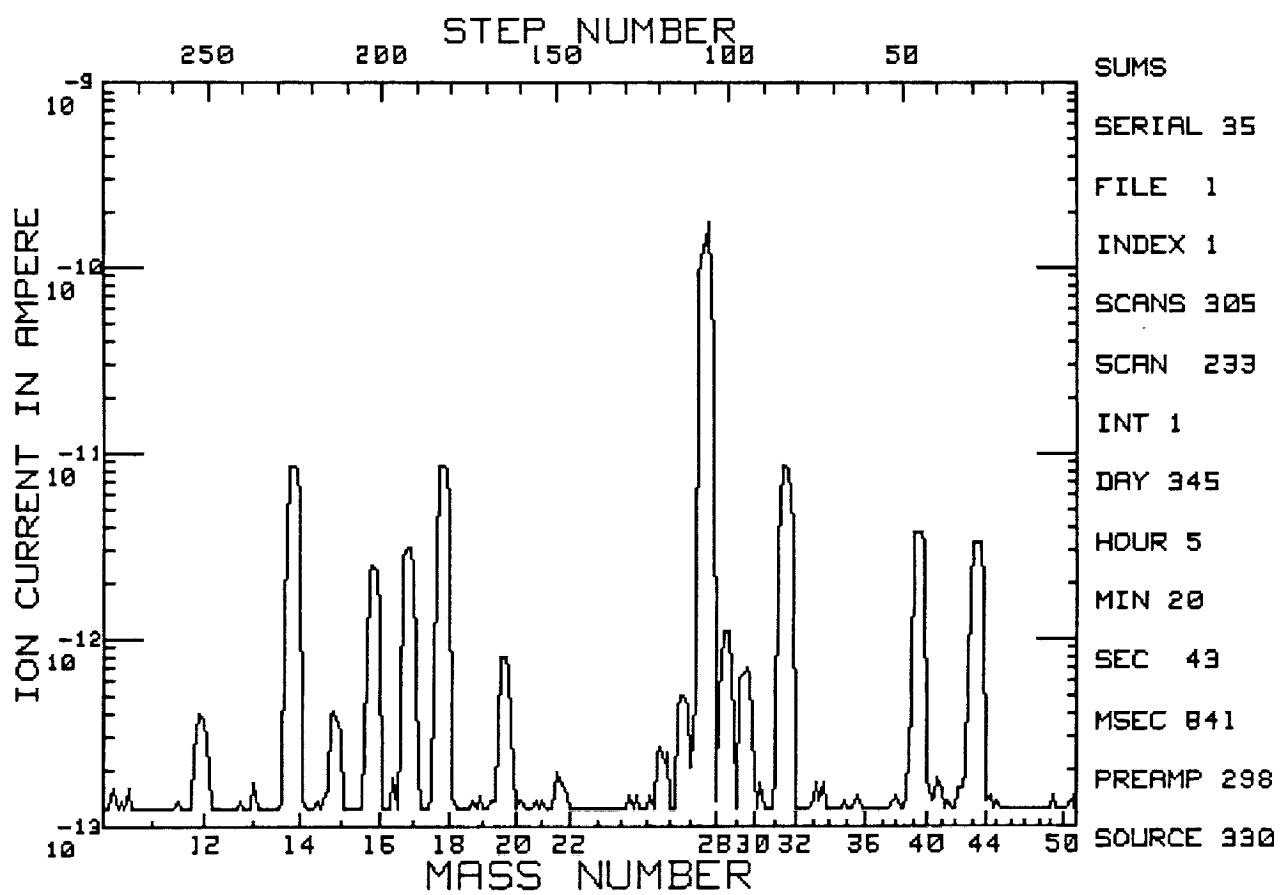
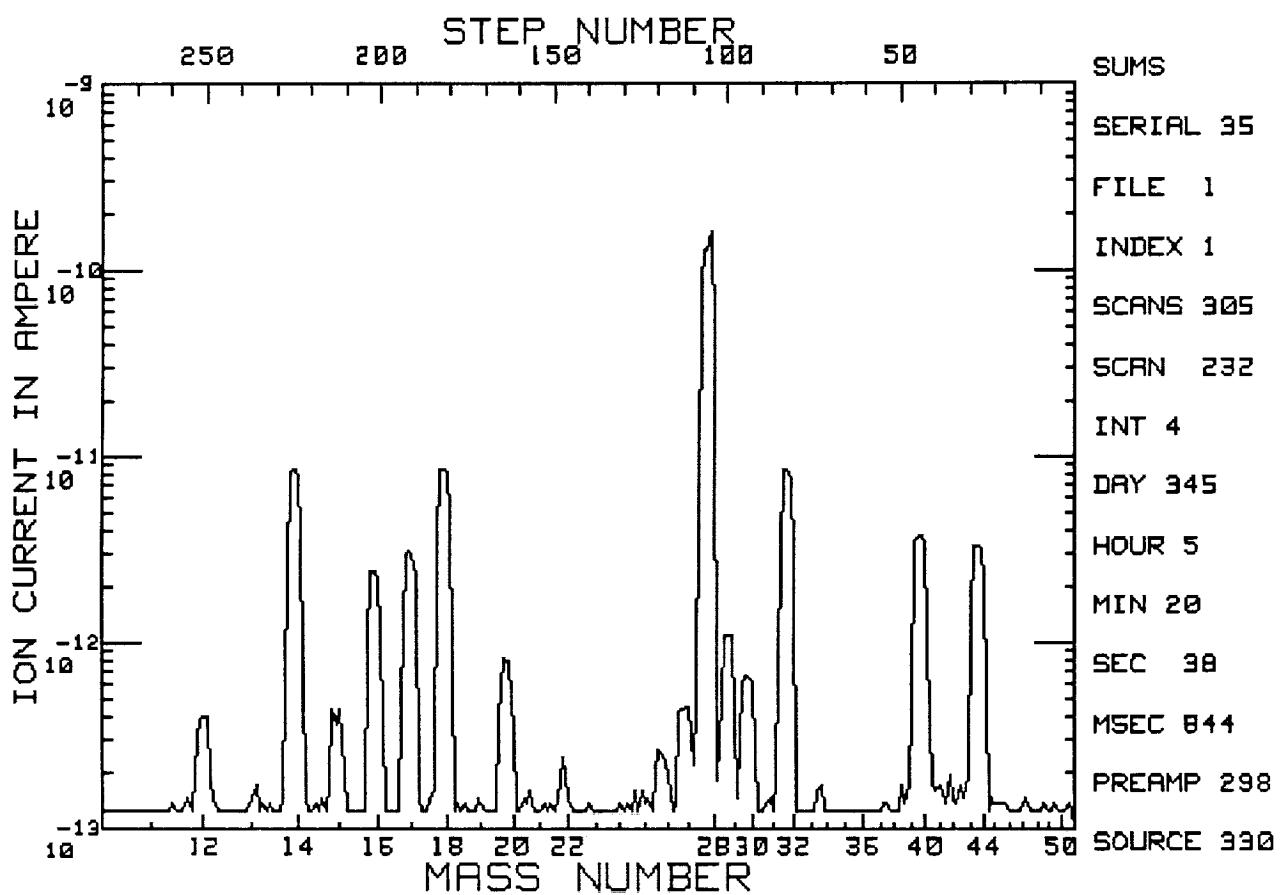


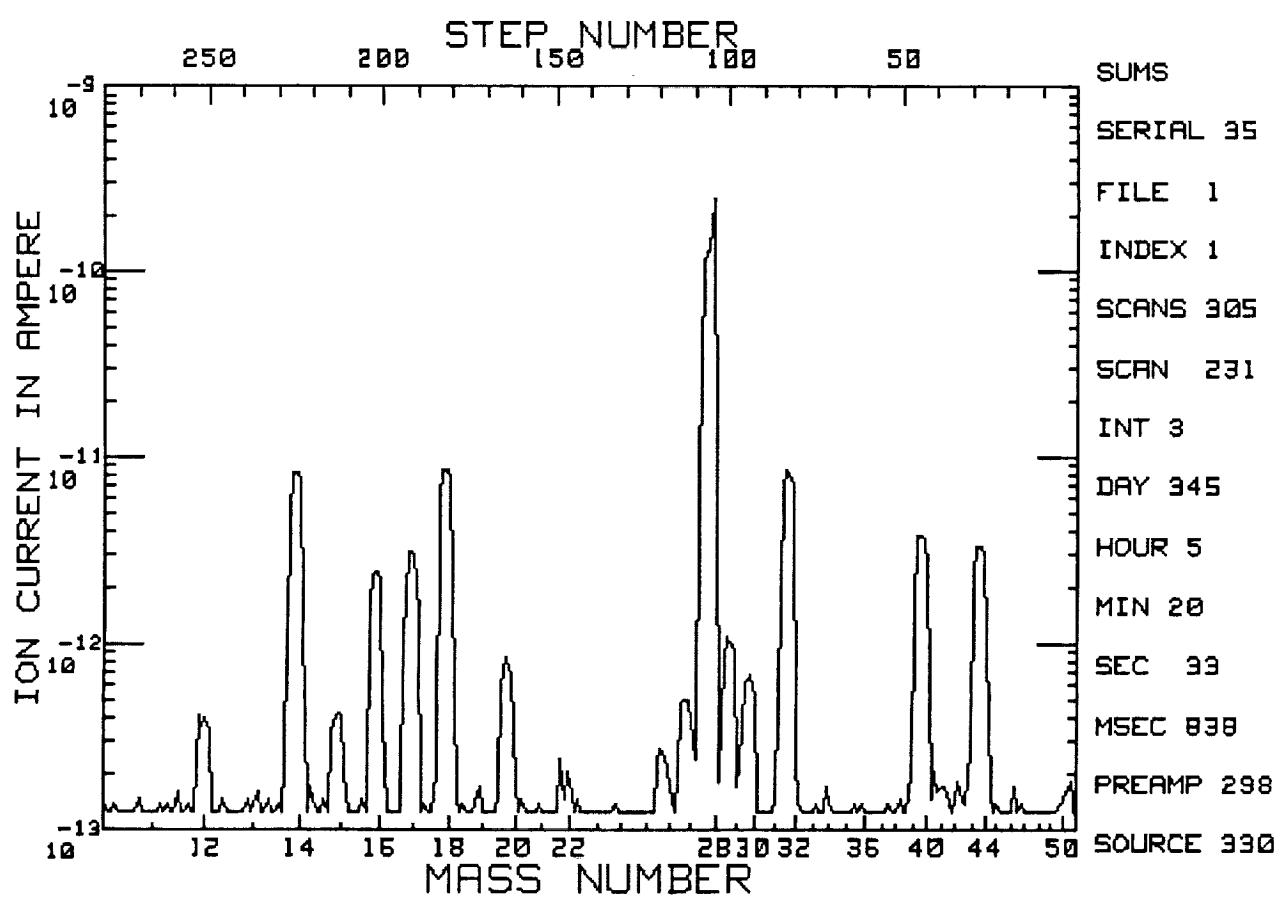
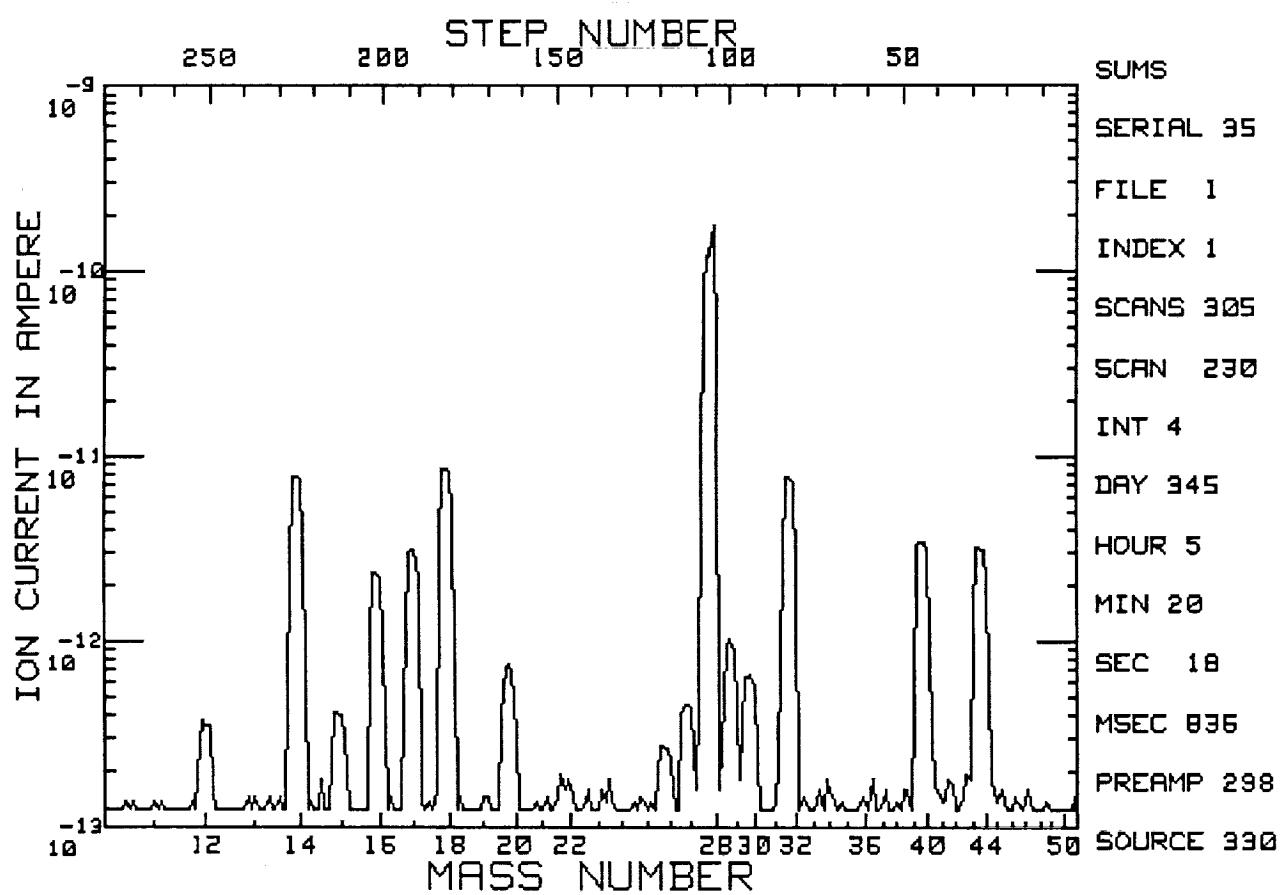


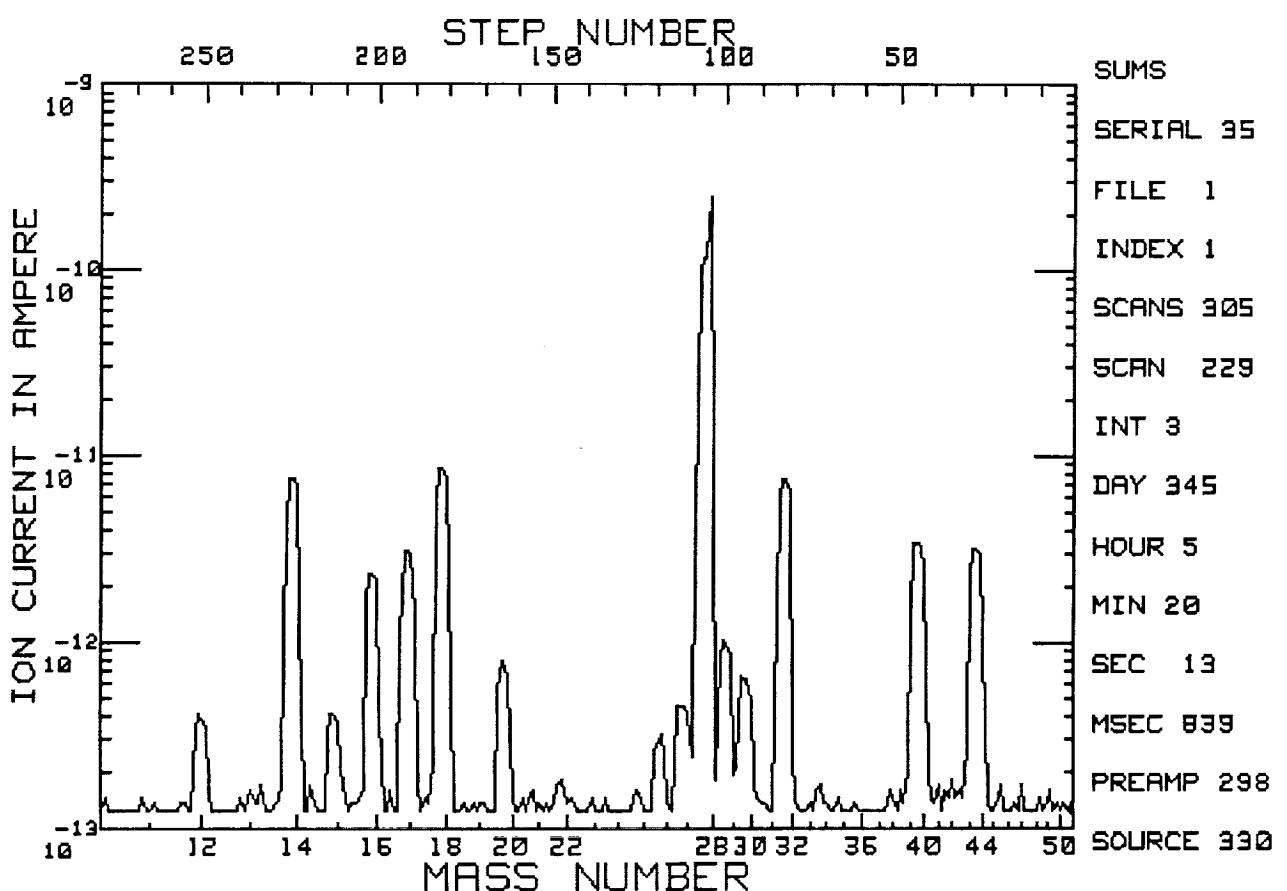
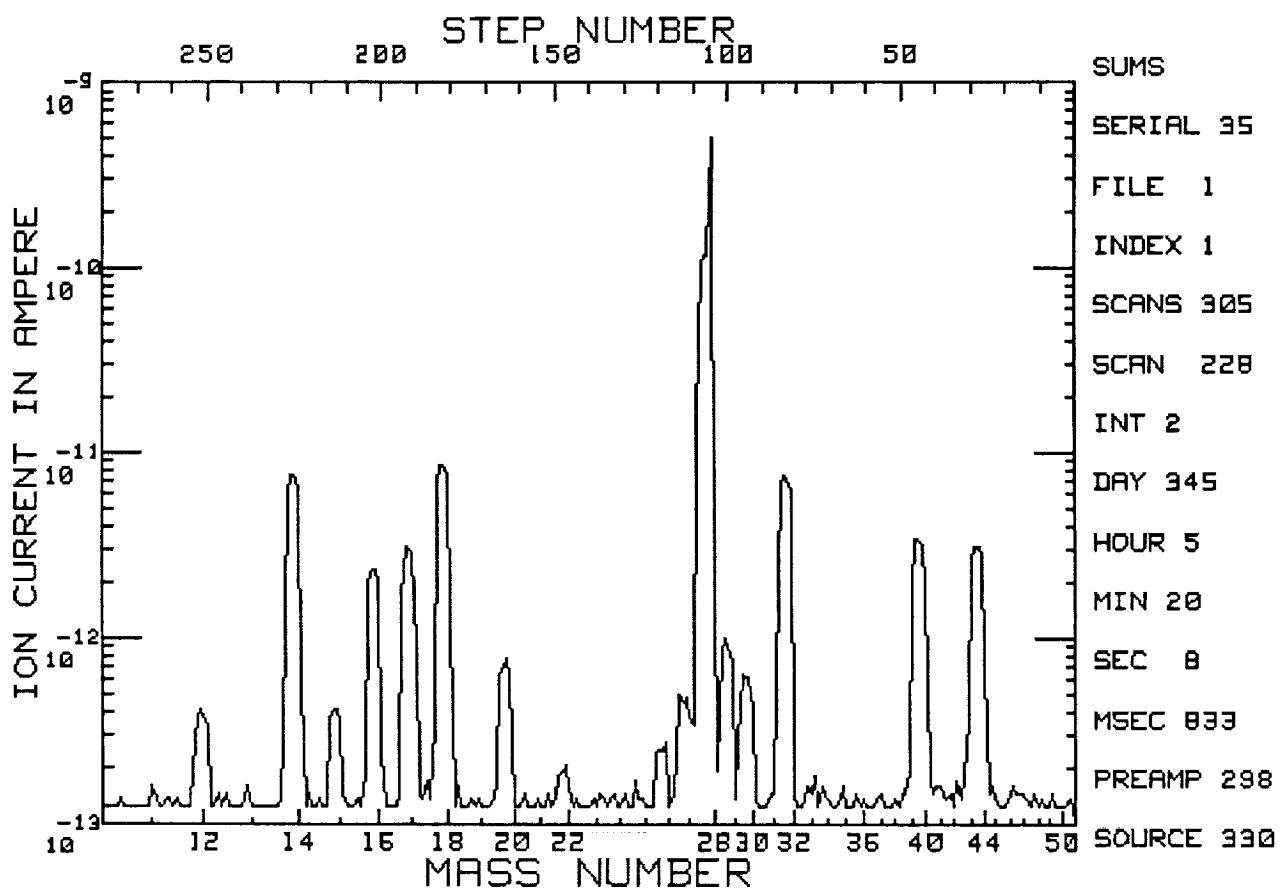


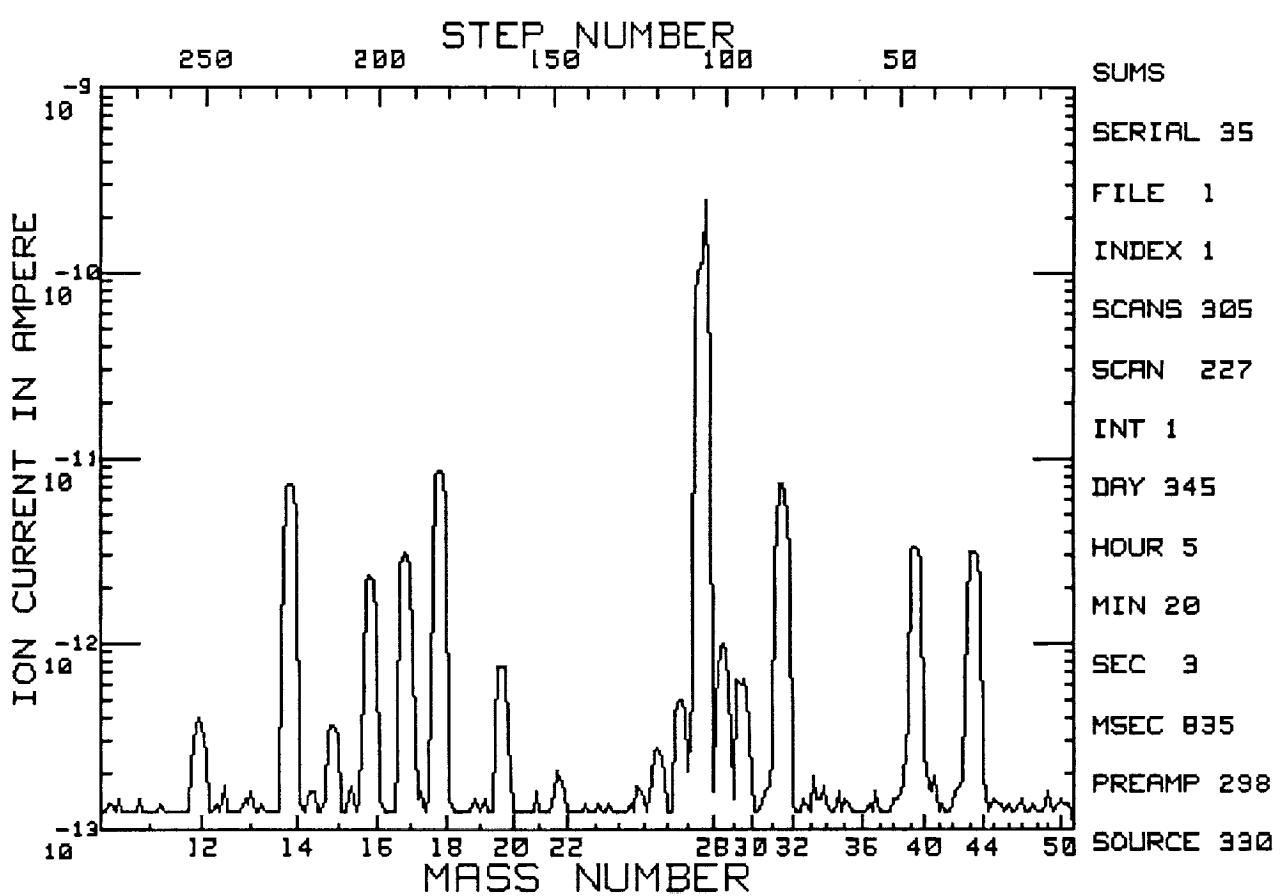
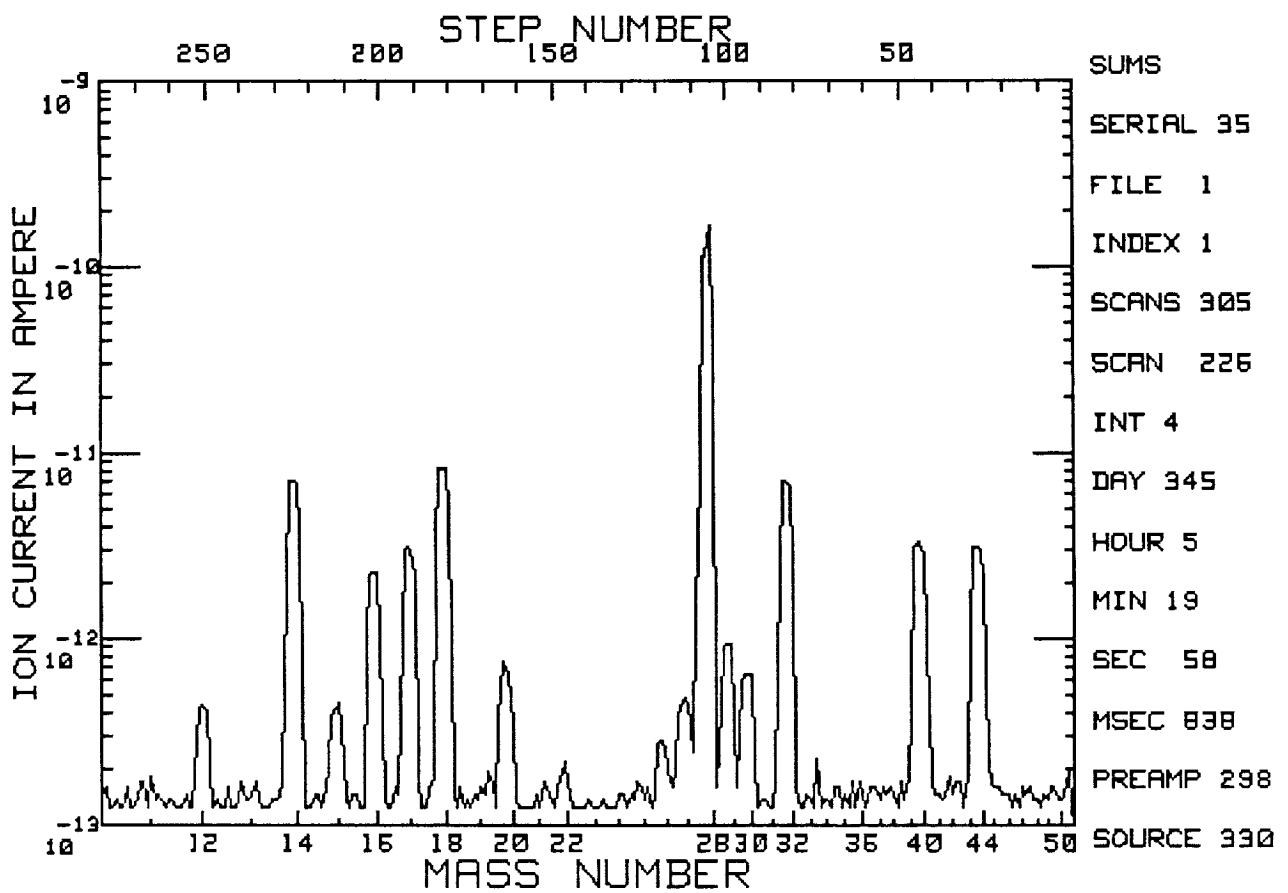


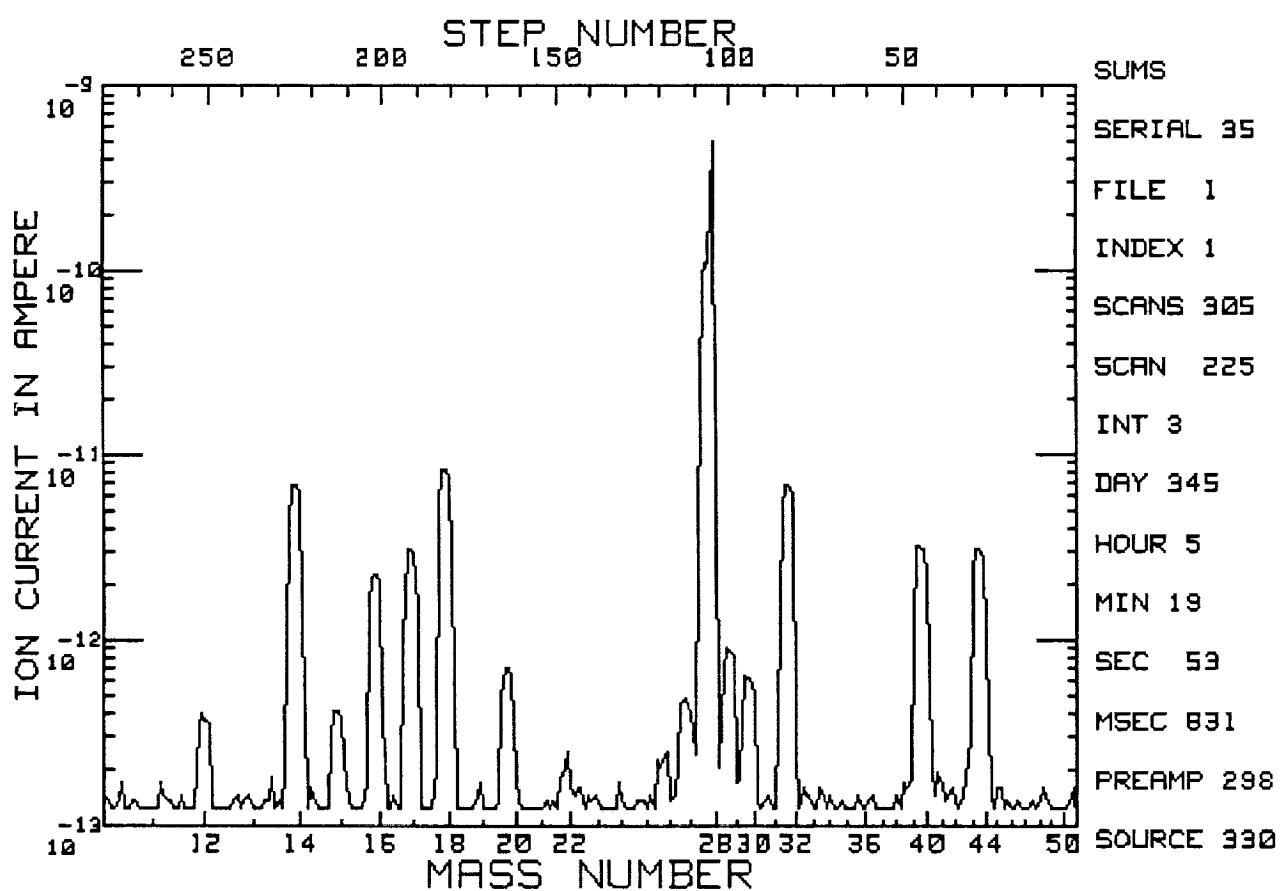
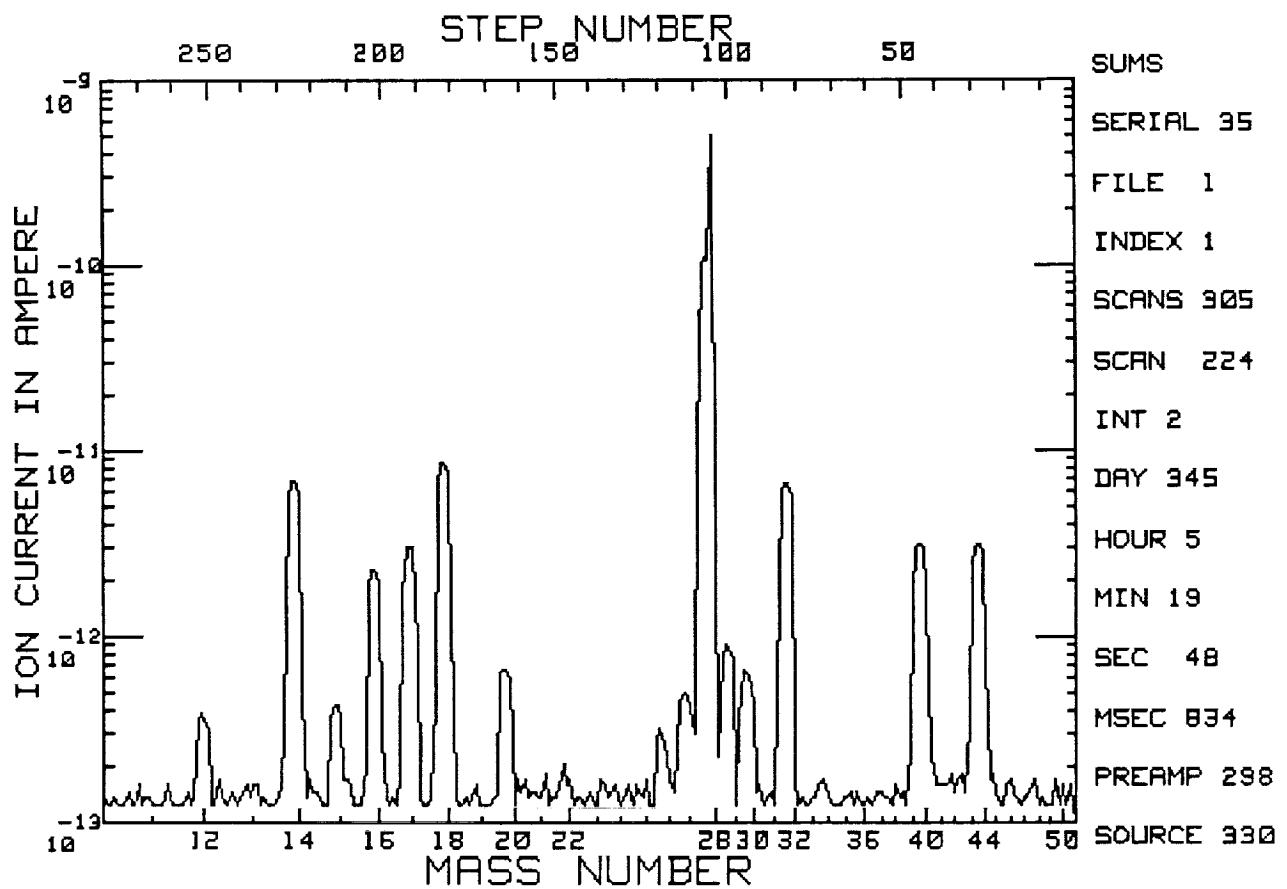


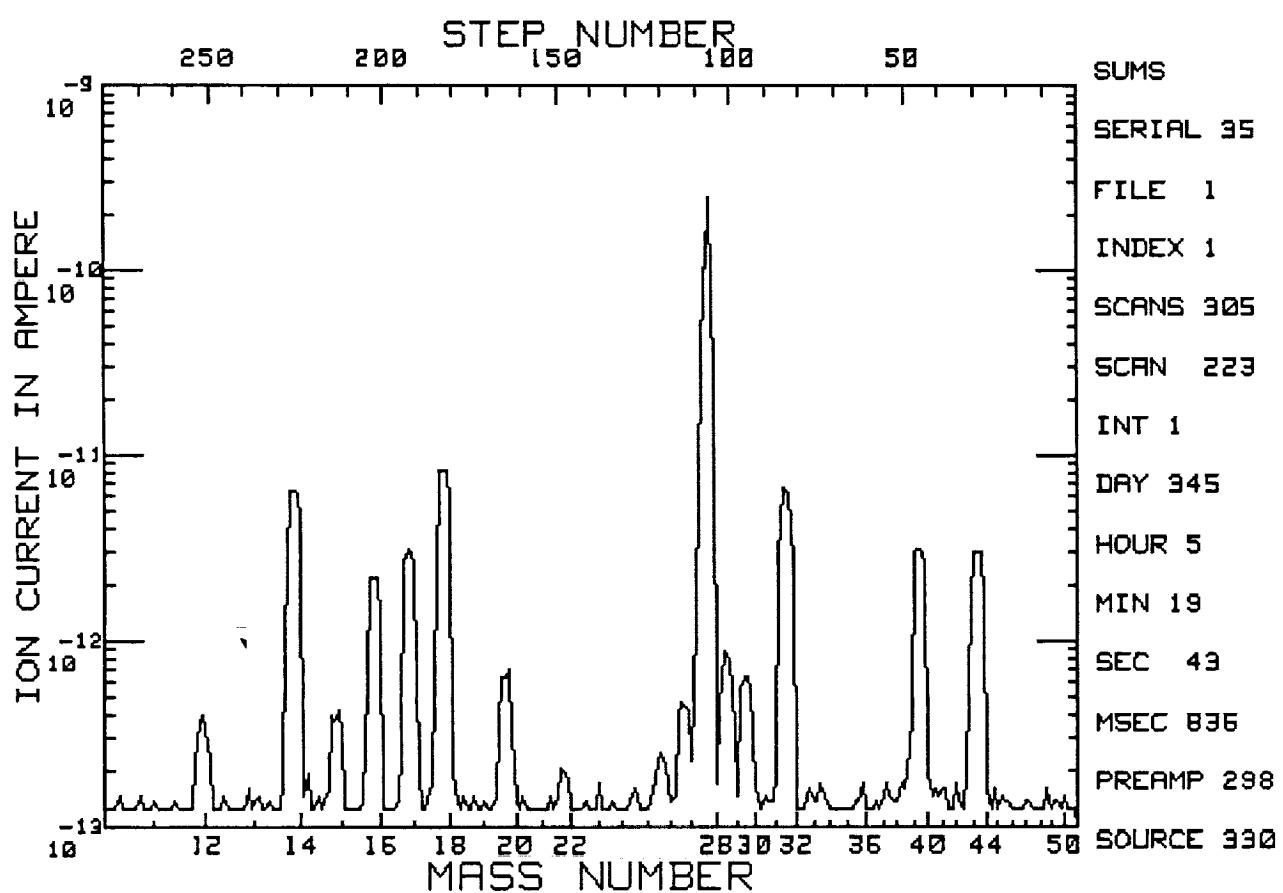
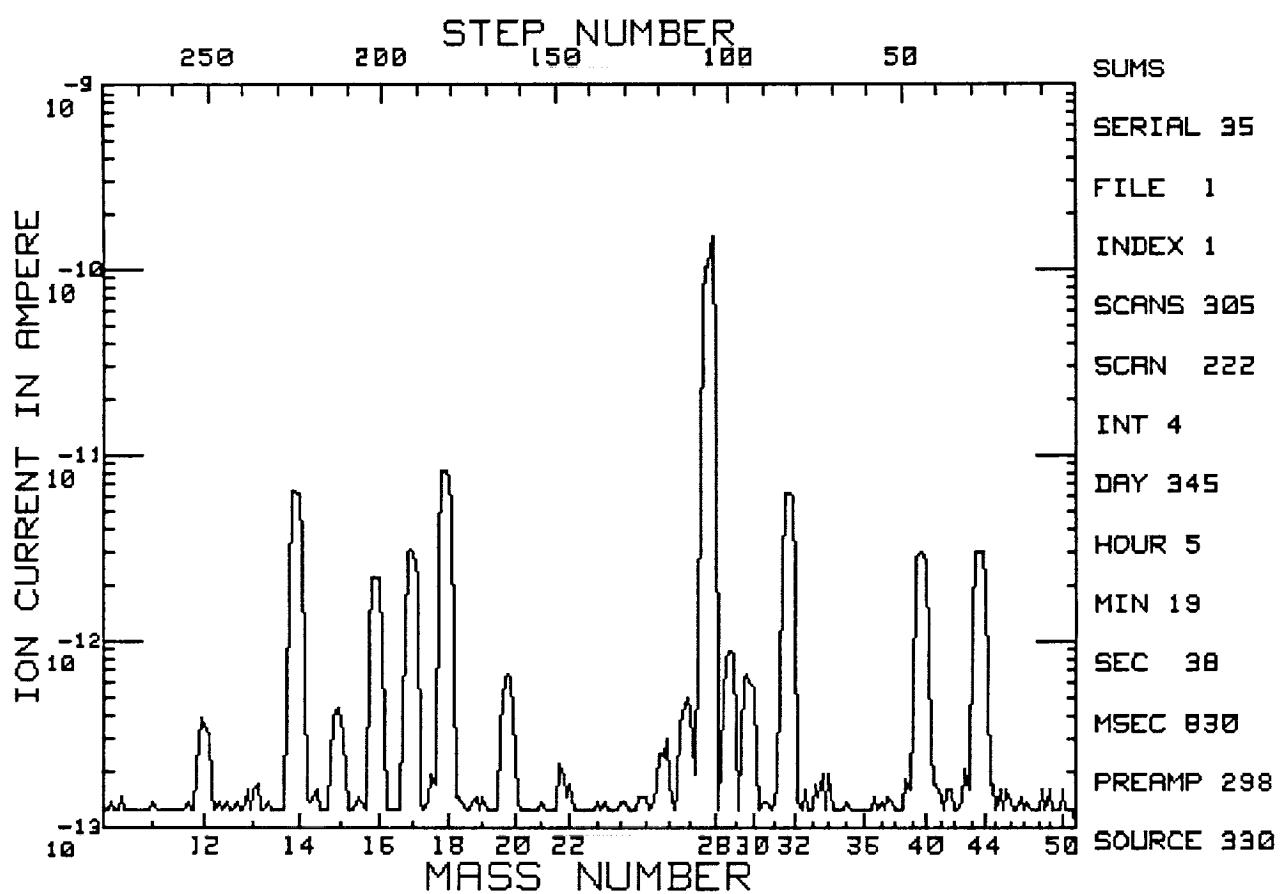


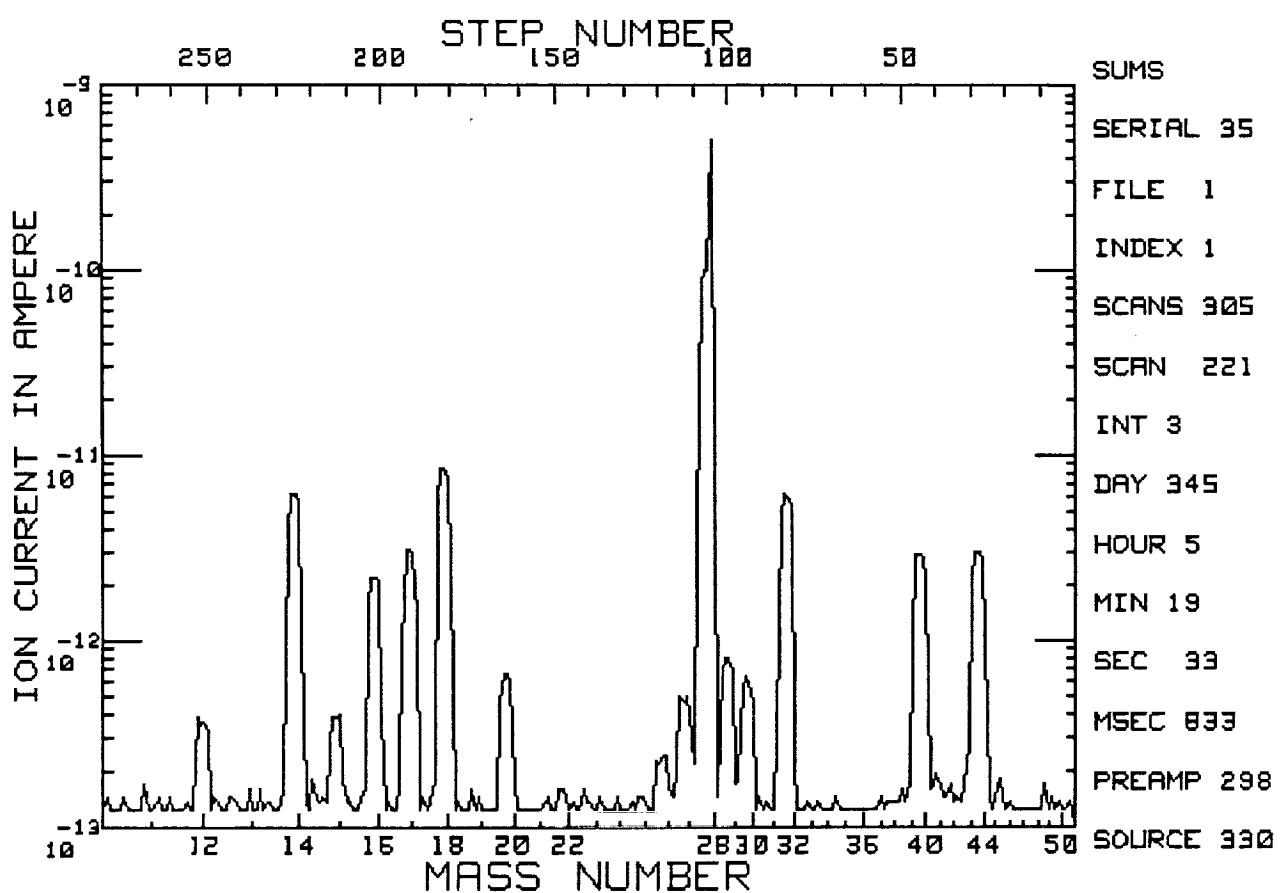
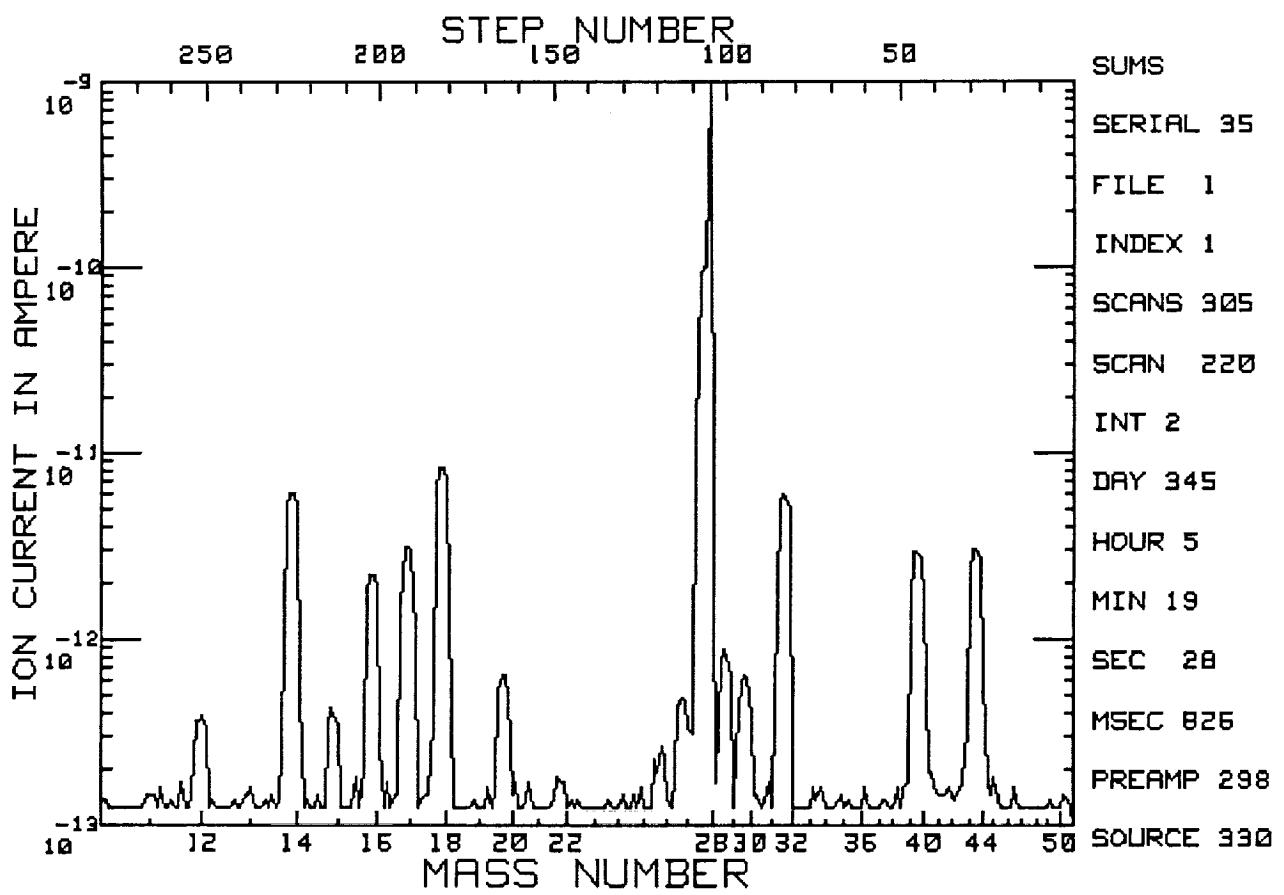












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<p>The Shuttle Upper Atmosphere Mass Spectrometer (SUMS), a component experiment of the NASA Orbital Experiments Program (OEX), was flown aboard the shuttle Columbia (OV102) mounted at the forward end of the nose landing gear well with an atmospheric gas inlet system fitted to the lower fuselage (chin panel) surface. The SUMS was designed to provide atmospheric data in flow regimes inaccessible prior to the development of the Space Transportation System (STS).</p> <p>The experiment mission operation begins about 1 hour prior to shuttle de-orbit entry maneuver and continues until reaching 1.6 torr (about 86 km altitude). The SUMS flew a total of three missions, 61C, STS-35, and STS-40. Between flights, the SUMS was maintained in flight ready status at the physics laboratory of UTD. The flight data has been analyzed by the NASA LaRC Aerothermodynamics Branch. Flight data spectrum plots and reports are presented in the Appendices to the Final Technical Report for NAS1-17399 as follows:</p>			
Attachment A: Flight 61-C Report (Vol. 2) Attachment B: Flight STS-35 Report (Vol. 3, Vol. 4, Vol. 5, Vol. 6, Vol. 7, and Vol. 8)		Attachment C: Flight STS-40 Report (Vol. 9) Attachment D: SUMS Software Listing (Vol. 9)	
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